DVP-C650D/C653D

RMT-D112A

SERVICE MANUAL

Self Diagnosis
Supported model

US Model
Canadian Model
E Model
DVP-C650D
PX Model
DVP-C653D

Photo: DVP-C650D

SPECIFICATIONS

CD/DVD player

Laser	Semiconductor laser
Signal format system	NTSC

Audio characteristics

Frequency response	DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1 dB)* DVD (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB) CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio	More than 115 dB (LINE OUT (AUDIO 1, 2) connectors only)
Harmonic distortion	Less than 0.0025%
Dynamic range	More than 100 dB (DVD) More than 97 dB (CD)
Wow and flutter	Less than detected value (±0.001% W PEAK)

Outputs and inputs

	Jack type	Output level	Load impedance
LINE OUT (AUDIO 1, 2)	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
LINE OUT (VIDEO 1, 2)	Phono jacks	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT (1, 2)	4-pin mini DIN	Y: 1.0 Vp-p C: 0.286 Vp-p	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT (Y, PB/B-Y, PR/R-Y)	phono jacks	Y: 1.0 Vp-p PB/B-Y, PR/R-Y: 0.7 Vp-p	75 ohms, sync negative 75 ohms
PHONES	Phone jack	12 mW	32 ohms
5.1CH OUTPUT	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
S-LINK	Mini jack	–	–
MEGA CONTROL	Mini jack	–	–
AUDIO IN	Phono jack	2 Vrms	47 kilohms

General

Power requirements (indicated on the rear panel)
120 V AC, 60 Hz (C650D : US, Canadian)
110–240 V AC, 50/60 Hz
(C653D : E, C653D : PX)

Power consumption	18 W
Dimensions (approx.)	430 × 120 × 425 mm (17 × $4^{3}/_{4}$ × $16^{3}/_{4}$ in.) (w/h/d) incl. projecting parts
Mass (approx.)	6.1 kg (13 lb 7 oz)
Operating temperature	41°F to 95°F (5°C to 35°C)
Operating humidity	5% to 90%

Supplied accessories

- Audio/Video/S-link connecting cord (1) or Audio/Video connecting cord (1)
- S video cord (1)
- Plug adaptor (1) (except for the USA/Canada models)
- Remote commander (remote) RMT-D112A (1)
- Size AA (R6) batteries (2)

* The signals from LINE OUT (AUDIO 1, 2) connectors and 5.1 ch L, R connectors are measured. When you play the PCM sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency).

Design and specifications are subject to change without notice.

CD/DVD PLAYER

MICROFILM

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

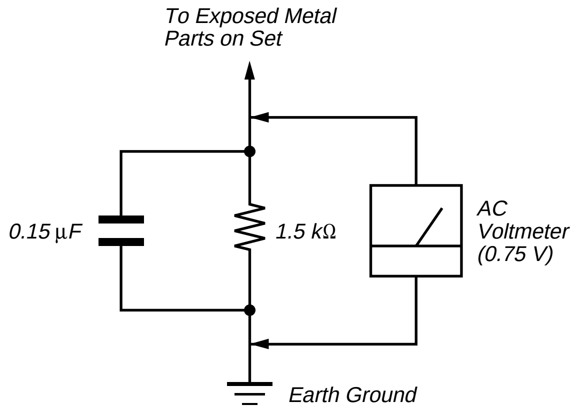

Fig. A Using AC voltmeter to check AC leakage

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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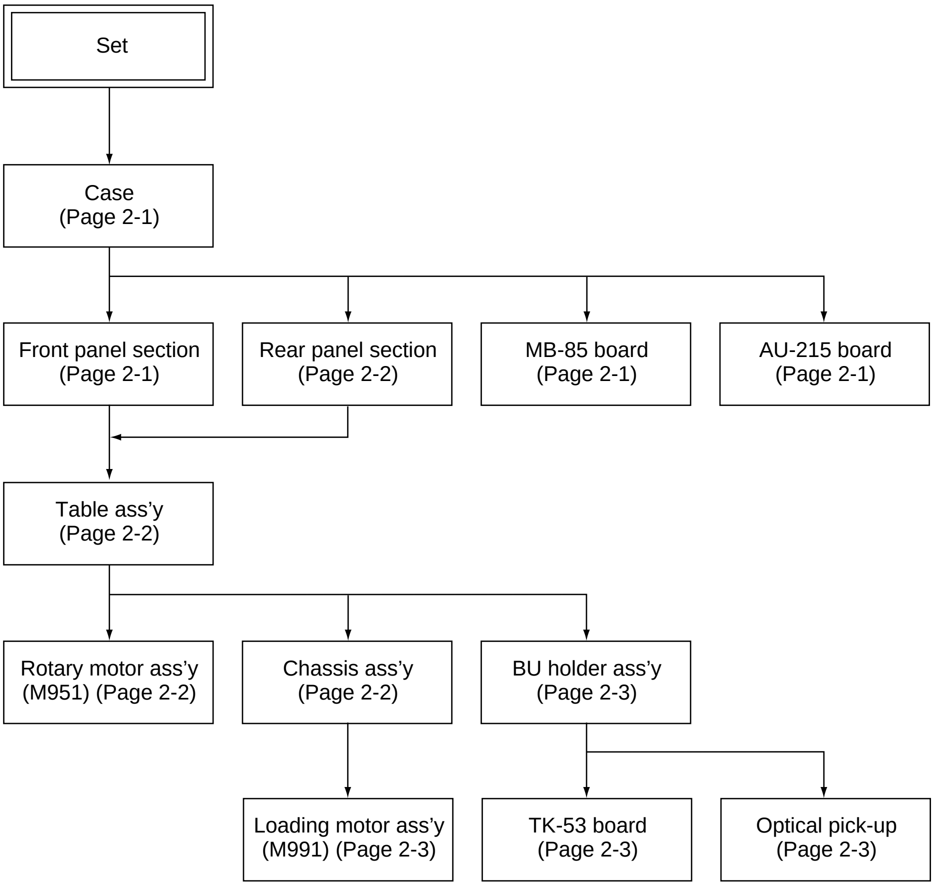
SERVICE NOTE

1. DISASSEMBLY

- This set can be disassembled in the order shown below.


Set
Case (Page 2-1)
Front panel section (Page 2-1)
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2. NOTE ON REMOVE THE CASE

1) Remove seven tapping screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the case as lift straight. (See Fig. 1)

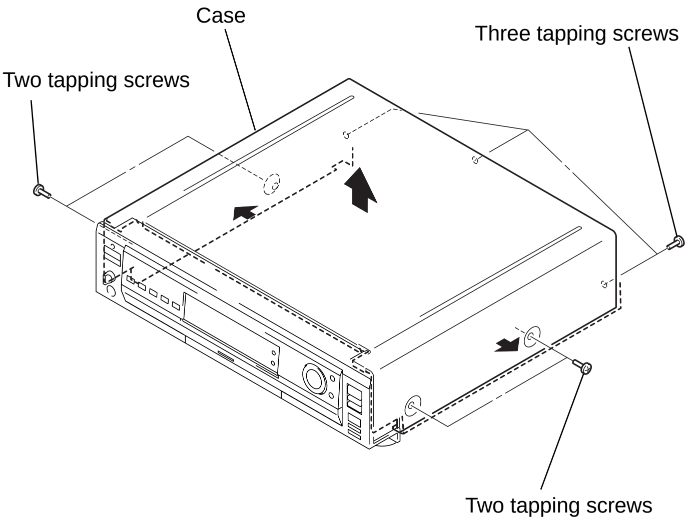

Case
Three tapping screws
Two tapping screws
Two tapping screws

Fig. 1

3. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a flat-blade screwdriver into a hole at the bottom, and rotare the cam gear in direction Ⓐ. (See Fig. 2)

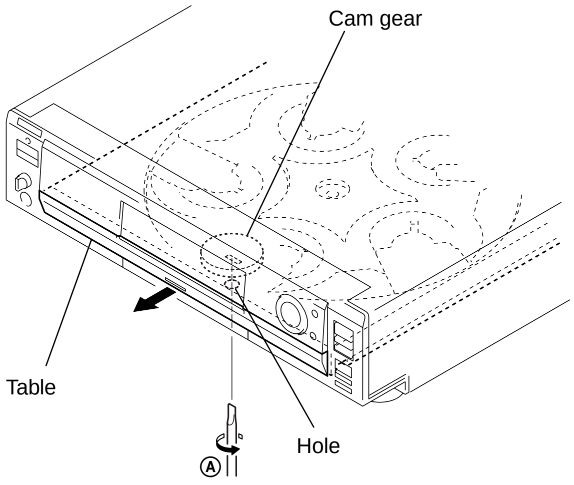

Cam gear
Table
Hole
Ⓐ

Fig. 2

4. NOTE ON MOUNTING GEARS

1) Mount the gear (U/D). (See Fig. 3.)
2) Rotate the gear (U/D) in the direction of the arrow. (down position) (See Fig. 3.)

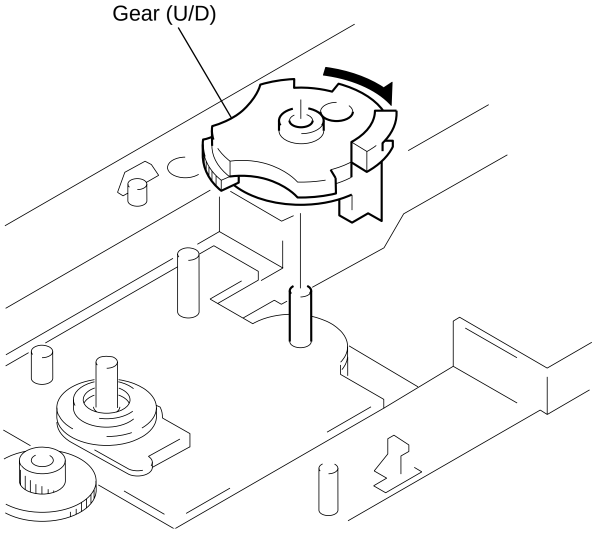


Fig. 3

3) Align triangle marks of the rotary encoder. (See Fig. 4.)
4) Escape the set lever. (See Fig. 4.)
5) Connect the boss of the gear (main) with the groove of the rotary encoder and mount the gear (main). (See Fig. 4.)

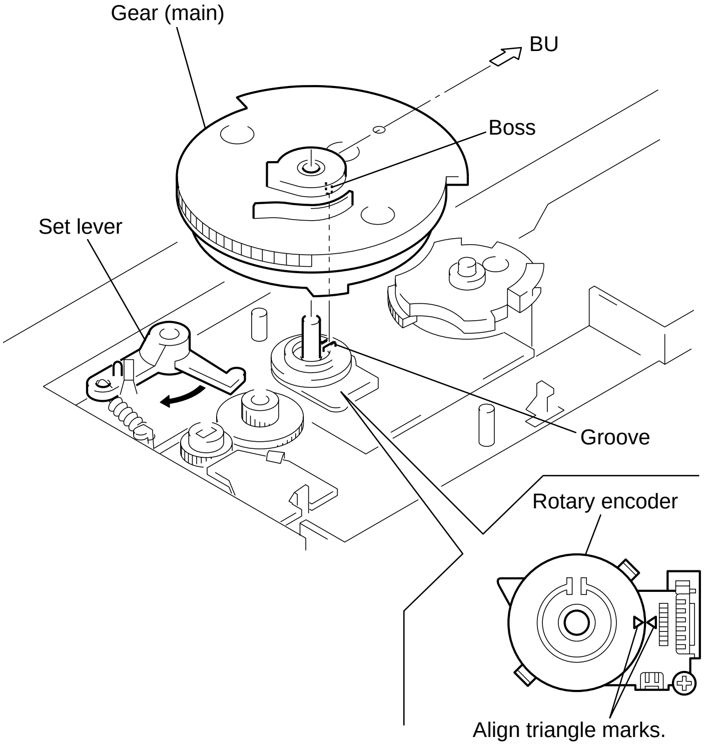

Gear (main)
BU
Boss
Set lever
Groove
Rotary encoder
Align triangle marks.

Fig. 4

6) Mount the lock lever (See Fig. 5.)
7) Mount the spring (lock lever). (See Fig. 5.)

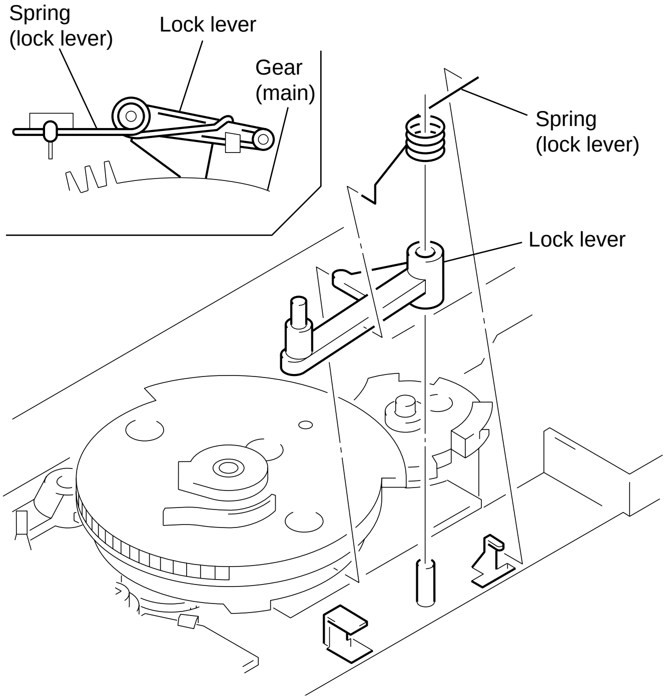

Spring (lock lever)
Lock lever
Gear (main)
Spring (lock lever)
Lock lever

Fig. 5

8) Rotate the gear (main) in the direction of the arrow Ⓐ by 90° turn. (Gear (U/D) is up position.) (See Fig. 6.)
9) Mount the Gear (rev). (See Fig. 6.)
10) Fix three stopper washers on the groove of shafts. (See Fig. 6.)

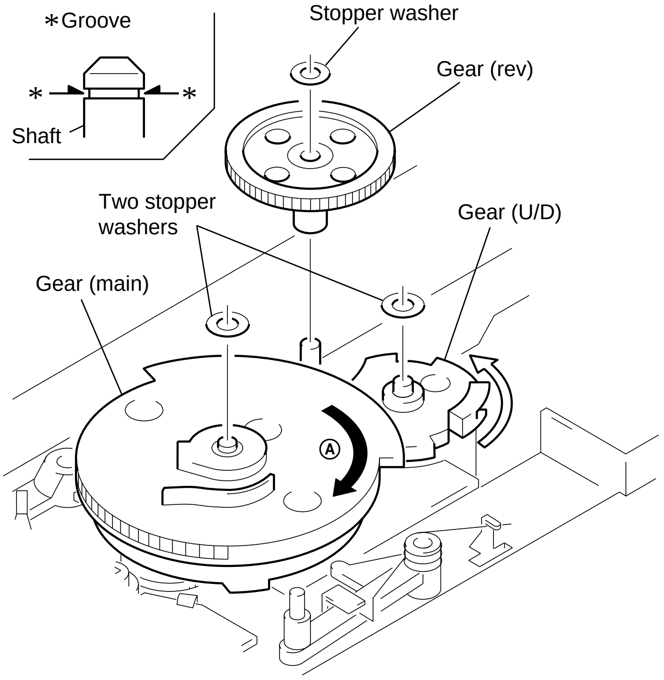

∗Groove
∗
∗
Shaft
Stopper washer
Gear (rev)
Two stopper washers
Gear (U/D)
Gear (main)
Ⓐ

Fig. 6

SECTION 1
GENERAL

This section is extracted from instruction manual (3-867-237-11)

About This Manual

Conventions

- This manual is for DVP-C650D which is available in the U.S.A., Canada and Latin America, and for DVP-C653D. There are some differences between the models available in the U.S.A. and Canada and those in Latin America, such as supplied accessories or order of the language options in the setup display. The illustrations used are of the models available in the U.S.A. and Canada unless otherwise mentioned.
- Instructions in this manual describe the controls on the player. You can also use the controls on the remote if they have the same or similar names as those on the player.
- The icons on the right are used in this manual:

Icon	Meaning
▣	Indicates that you can use only the remote to do the task.
💡	Indicates tips and hints for making the task easier.
DVD	Indicates the functions for DVD VIDEOs.
VIDEO CD	Indicates the functions for VIDEO CDs.
CD	Indicates the functions for Audio CDs.

This Player Can Play the Following Discs

	DVD VIDEOs		VIDEO CDs		Audio CDs	
Disc logo	DVD VIDEO		COMPACT disc DIGITAL VIDEO		COMPACT disc DIGITAL AUDIO TEXT	
Contents	Audio + Video		Audio + Video		Audio	
Disc size	12 cm	8 cm	12 cm	8 cm	12 cm	8 cm (CD single)
Play time	About 4 h (for single-sided DVD)/ about 8 h (for double-sided DVD)	About 80 min. (for single-sided DVD)/ about 160 min. (for double-sided DVD)	74 min.	20 min.	74 min.	20 min.

"DVD VIDEO" logo is a trademark.

This player conforms to the NTSC color system. You cannot play discs recorded in other color systems such as PAL or SECAM.

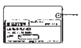
Region code of DVDs you can play on this unit

Your DVD player has a region code printed on the back of the unit and will only play DVDs that are labeled with identical region codes.

DVDs labeled 🌐ALL will be also played on this unit.

If you try to play any other DVD, the message "Playing this disc prohibited by area limits." will appear on the TV screen.

Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by the area limits.

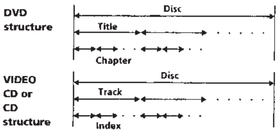


Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally fixed by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs or VIDEO CDs.

Terms for discs

- **Title**
  The longest sections of a picture or a music piece on a DVD; a movie, etc., for a picture piece on a video software; or an album, etc., for a music piece on an audio software. Each title is assigned a title number enabling you to locate the title you want.
- **Chapter**
  Sections of a picture or a music piece that are smaller than titles. A title is composed of several chapters. Each chapter is assigned a chapter number enabling you to locate the chapter you want. Depending on the disc, no chapters may be recorded.
- **Track**
  Sections of a picture or a music piece on a VIDEO CD or a CD. Each track is assigned a track number enabling you to locate the track you want.



- **Index (CD) / Video Index (VIDEO CD)**
  A number that divides a track into sections to easily locate the point you want on a VIDEO CD or a CD. Depending on the disc, no indexes may be recorded.
- **Scene**
  On a VIDEO CD with PBC functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes." Each scene is assigned a scene number enabling you to locate the scene you want.

Note on PBC (Playback Control) (VIDEO CDs)

This player conforms to Ver. 1.1 and Ver. 2.0 of VIDEO CD standards. You can enjoy two kinds of playback according to the disc type.

Disc type	You can
VIDEO CDs without PBC functions (Ver. 1.1 discs)	Enjoy video playback (moving pictures) as well as music.
VIDEO CDs with PBC functions (Ver. 2.0 discs)	Play interactive software using menu screens displayed on the TV screen (PBC Playback), in addition to the video playback functions of Ver 1.1 discs. Moreover, you can play high-resolution still pictures, if they are included on the disc.

Discs that the player cannot play

The player cannot play discs other than the ones listed in the table on page 4. CD-R, CD-ROMs including PHOTO CDs, data sections in CD-EXTRAs, DVD-ROMs etc., cannot be played.

When playing DTS*-encoded CDs, excessive noise will be heard from the analog stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo outputs of the DVD player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel DTS Digital Surround™ decoder system must be connected to the digital output of the DVD player.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

* "DTS" is a trademark of Digital Theater Systems, Inc.

Precautions

On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- Should the AC power cord (mains lead) need to be changed, have it done at a qualified service shop only.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.

On adjusting volume

- Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

On cleaning

- Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

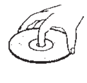
IMPORTANT NOTICE

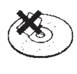
Caution: The enclosed DVD player is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are very susceptible.

Notes on Discs

On handling discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.
- Do not stick paper or tape on the disc.
  If there is glue (or a similar substance) on the disc, remove the glue completely before using the disc.

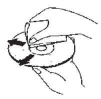




- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as there can be considerable rise in temperature inside the car.
- After playing, store the disc in its case.

On cleaning

- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.



- Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

Getting Started

This section describes how to hook up the CD/DVD player to a TV (with audio/video input jacks) and/or an AV receiver (amplifier). You cannot connect this player to a TV which does not have a video input connector. Be sure to turn off the power of each component before making the connections.

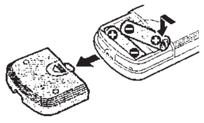
Unpacking

Check that you have the following items:

- Audio/video/S-link connecting cord (1) or Audio/video connecting cord (1)
- S video cord (1)
- Plug adaptor (1) (except for the USA/Canada models)
- Remote commander (remote) RMT-D112A (1)
- Size AA (R6) batteries (2)

Inserting batteries into the remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the + and – on the batteries. When using the remote, point it at the remote sensor ◨ on the player.



💡 **You can control TVs and AV receivers using the supplied remote**

See page 61.

Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you will not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Transporting the player

Before transporting the player, follow the procedure below to return the internal mechanisms to their original positions.

1. **Remove all the discs from the disc tray.**
2. **Press ≜ to close the disc tray.**
   Make sure that "NO DISC" appears in the front panel display.
3. **Wait for 10 seconds, then press I/⏻ to turn off the player.**

TV Hookups

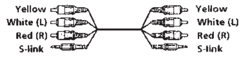
This connection is for listening to the sound through TV speakers (2ch – L, R). Refer to the instructions supplied with the component to be connected.

Required cords

Audio/video/S-link connecting cord (supplied) (1) or Audio/video connecting cord (supplied) (1)
S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Yellow (video) to Yellow, Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.
If your TV has an S-link connector, you can control the CD/DVD player from the TV. Connect the TV via the S-LINK connector.
If your TV has an S video input connector, connect the component via the S VIDEO OUT connector using the S video cord. You will get a better picture.
Refer to the instructions supplied with the TV to be connected.

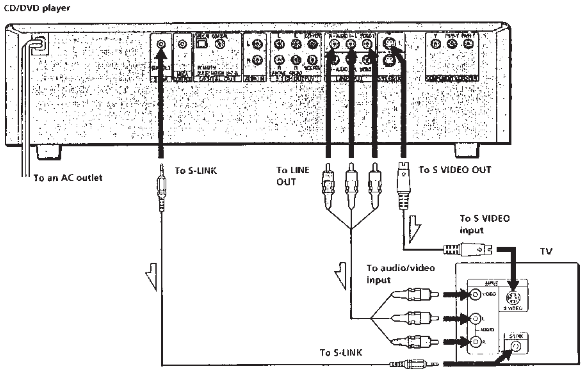
For the models available in U.S.A. and Canada


Yellow
White (L)
Red (R)
S-link
Yellow
White (L)
Red (R)
S-link

For the models available in Latin America

Yellow
White (L)
Red (R)
Yellow
White (L)
Red (R)

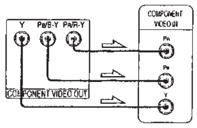
If your TV has an S video input connector


CD/DVD player
To an AC outlet
To S-LINK
To LINE OUT
To S VIDEO OUT
To S VIDEO input
TV
To audio/video input
To S-LINK

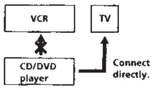
: Signal flow

If you connect the player to a monitor or projector having component video input connectors that conform to output signals from the COMPONENT VIDEO OUT (Y, PB/B-Y, PR/R-Y) connectors on the player

Connect the component via the COMPONENT VIDEO OUT connectors using three video connecting cords (not supplied) of the same kind. You will get a better picture.


Y
PB/B-Y
PR/R-Y
COMPONENT VIDEO OUT
COMPONENT VIDEO IN
PR
PB
Y

Notes
- Refer to the instructions supplied with the component to be connected.
- Do not connect this player to a video deck. If you view the pictures on your TV after making the connections shown below, a picture noise may appear.


VCR
TV
CD/DVD player
Connect directly.

- Depending on the TV or receiver (amplifier), sound distortion may occur because the audio output level is high. In this case, set "AUDIO ATT" in "AUDIO SETUP" to "ON" in the setup display. For details, see page 57.

Setups for the player

Some setups are necessary for the player depending on the TV or other components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 49.

- **To connect the player to a normal TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "4:3 LETTER BOX" (default setting) or "4:3 PAN SCAN." For details, see page 53.
- **To connect the player to a TV having the WIDE MODE function**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9/4:3 WIDE MODE." For details, see page 53.
- **To connect the player to a wide-screen TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9/4:3 WIDE MODE." For details, see page 53.

Receiver (Amplifier) Hookups

This connection is for listening to the sound through speakers connected to a receiver (amplifier such as an integrated stereo amplifier, a receiver having a built-in Dolby Pro Logic decoder, etc.). Refer to the instructions supplied with the component to be connected.
You can enjoy 5.1 channel surround sound by connecting a receiver (amplifier) with 5.1 channel inputs. See page 42.

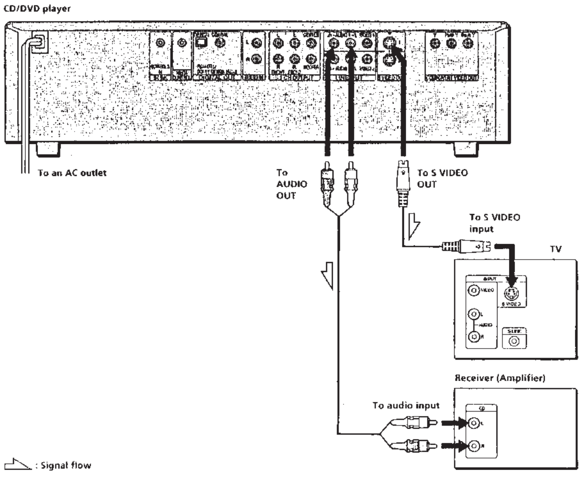
You can enjoy surround when connecting front speakers only
You can use 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (VES: Virtual Enhanced Surround). For details, see page 42.

Required cords

Audio connecting cord (not supplied) (1)
S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

White (L)
Red (R)
White (L)
Red (R)


CD/DVD player
To an AC outlet
To AUDIO OUT
To S VIDEO OUT
To S VIDEO input
TV
Receiver (Amplifier)
To audio input

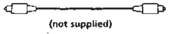
: Signal flow

If you have a digital component such as a receiver (amplifier) with a digital connector, DAT or MD

Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).
When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM" and "DTS" to "OFF" in the setup display (page 58).

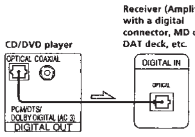
■ When using an optical digital connecting cord

Optical digital connecting cord



(not supplied)

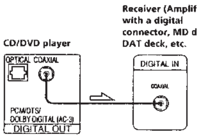
Take off the cap and plug in the optical digital connecting cord.


Receiver (Amplifier) with a digital connector, MD deck, DAT deck, etc.
CD/DVD player
OPTICAL COAXIAL
PCM/DTS/ DOLBY DIGITAL (AC-3)
DIGITAL OUT
DIGITAL IN
OPTICAL

■ When using a coaxial digital connecting cord

Coaxial digital connecting cord

(not supplied)


Receiver (Amplifier) with a digital connector, MD deck, DAT deck, etc.
CD/DVD player
OPTICAL COAXIAL
PCM/DTS/ DOLBY DIGITAL (AC-3)
DIGITAL OUT
DIGITAL IN
COAXIAL

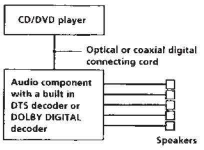
Notes
- Refer to the instructions supplied with the component to be connected.
- You cannot make digital audio recordings of discs recorded in multi-channel surround format directly using an MD deck or DAT deck.

> **When you make the connections above, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON." If you do, a loud noise will suddenly come out from the speakers, affecting your ears or causing the speakers to be damaged.**

If you have an audio component with a built-in DTS decoder or Dolby Digital decoder

Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).

- ■ **When you play a DVD that is recorded in DTS format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DTS" to "ON" in the setup display (page 58).
- ■ **When you play a DVD that is recorded in Dolby Digital format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "DOLBY DIGITAL" in the setup display (page 58).


CD/DVD player
Optical or coaxial digital connecting cord
Audio component with a built in DTS decoder or DOLBY DIGITAL decoder
Speakers

Notes
- Refer to the instructions supplied with the component to be connected.
- **When you do not connect an audio component with a built in DTS decoder, do not set "DTS" to "ON."**
- **When you do not connect an audio component with a built in DOLBY DIGITAL decoder, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL."**

Setups for the player

Some setups are necessary for the player depending on the components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 49.

- **To listen to the sound through speakers connected to a receiver (amplifier) having a digital connector or to output the sound to a digital component such as a DAT or MD deck**
  When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM" and "DTS" to "OFF" in the setup display (page 58). These are the default settings.

5.1 Channel Surround Hookups

Some DVDs have a sound track with up to 5.1 channels recorded in Dolby* Digital format. Using a receiver (amplifier) having 5.1 channel inputs and the 5 (+1) speakers, you can enjoy more real audio presence in the comfort of your own home.
"5 channel" stands for the 2 front speakers (Left and Right), 2 rear speakers (Left and Right) and 1 center speaker. The "0.1 channel" (+1) stands for the subwoofer which outputs the bass.
Even if you have fewer than 5 (+1) speakers, the player distributes the output signal to the speakers appropriately.
This player has VIRTUAL 3D SURROUND mode.
You can use the 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR). For details on the VIRTUAL 3D SURROUND mode, see page 42.

Speaker placement

For the best possible surround sound, we recommend the following conditions.

- Use higher performance speakers.
- Use rear and center speakers that match your front speakers in size and performance.
- All speakers should be the same distance from the listening position.
- Place the subwoofer between the front (L, R) speakers if possible.

Note

Do not place the center or rear speakers farther away from the listening position than the front speakers.

Required cords

Audio cords (not supplied)

Two for the 5.1CH OUTPUT FRONT and REAR jacks

White (L)
Red (R)
White (L)
Red (R)

Monaural audio cords (not supplied)

Two for the 5.1CH OUTPUT CENTER and WOOFER jacks

Black
Black

S video cord (supplied)

One for the S VIDEO OUT jacks

Notes

- Do not connect the power cord to an AC outlet or press the POWER switch before completing all connections.
- The cord connectors should be fully inserted into the jacks. Loose connection may cause hum and noise.
- Jacks and plugs of the connecting cords are color-coded as follows:
  Red jacks and plugs: Right audio channel
  White jacks and plugs: Left audio channel
  You can use either red or white cables to connect the center speaker and subwoofer.
- When you connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied), see page 11.

Setups for the player

Some setups are necessary for the player depending on the components to be connected.
Use the setup display or the Control Menu display to change the various settings.
For details on using the setup display, see page 49.
For details on enjoying Digital Cinema Sound, see page 42.

- **To enjoy Dolby Digital surround sound by connecting the player to a receiver (amplifier) with 5.1 channel inputs**
  Set each speaker position or distance, etc. See page 59.

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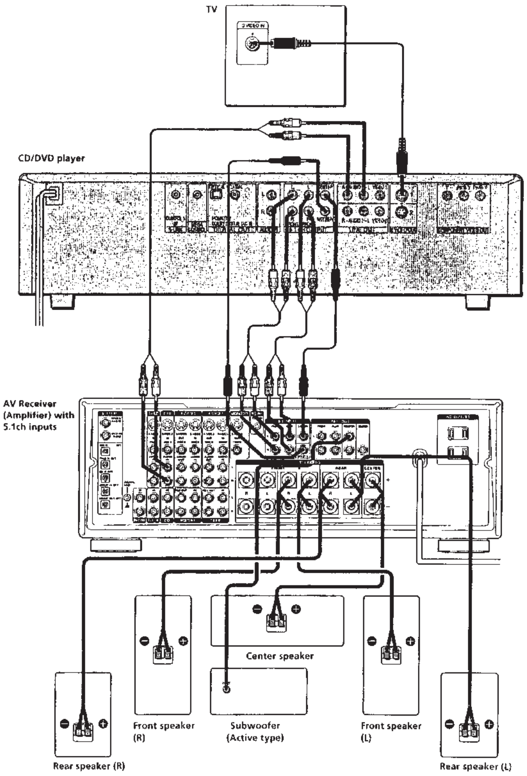
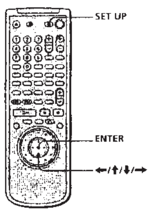
Confidential Unpublished Works. ©1992-1997 Dolby Laboratories, Inc. All rights reserved.

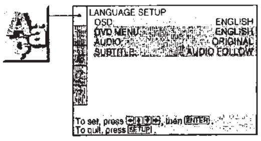


Selecting the Language for On-Screen Display

You can select the language for the setup display, the Control Menu display or the messages displayed on the screen. The default setting is "ENGLISH" for the models available in the U.S.A. and Canada, and "SPANISH" for the models in Latin America.

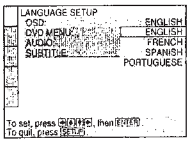


1 Press SET UP and select "LANGUAGE SETUP" using ↑/↓, and then press ENTER.



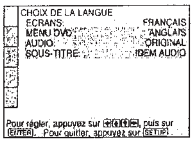
LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

2 Select "OSD" using ↑/↓, then press → or ENTER.



LANGUAGE SETUP
OSD: ENGLISH
DVD MENU:
AUDIO:
SUBTITLE:
ENGLISH
FRENCH
SPANISH
PORTUGUESE
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

3 Select "FRENCH" using ↑/↓, then press ENTER.



CHOIX DE LA LANGUE
ECRANS: FRANÇAIS
MENU DVD: ANGLAIS
AUDIO: ORIGINAL
SOUS-TITRE: IDEM AUDIO
Pour régler, appuyez sur ←↑↓→, puis sur ENTER. Pour quitter, appuyez sur SETUP.

To cancel using the setup display

Press SET UP.

Note

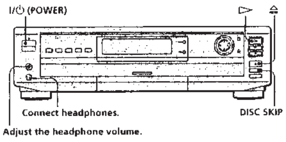
For the languages you can select, see page 52.

Playing Discs

This chapter describes how to play a DVD/CD/VIDEO CD.

Playing Discs DVD VIDEO CD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the instructions supplied with your disc.

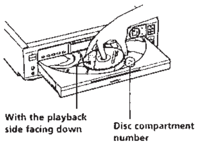


1 **Make settings on your TV.**
Turn on the TV and select the video input so that you can view the pictures from this player.

When using a receiver (amplifier)
Turn on the receiver (amplifier) and select the appropriate position so that you can listen to the sound from this player.

2 **Press I/⏻ (POWER) to turn on the player.**
The indicator (red) above the I/⏻ (POWER) button changes to green and the front panel display lights up.

3 **Press ≙, and place the disc on the disc tray.**
To place other discs, press DISC SKIP and place the discs in the order you want to play.
Each time you press DISC SKIP, the disc tray turns and you can place the discs in the empty compartments.
The player plays from the last disc placed.



4 **Press ▷.**
The disc tray closes, and the player starts playing back all discs (continuous play). Adjust the volume on the TV or the receiver (amplifier).

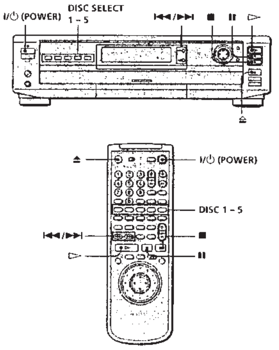
After following Step 4

■ When playing a DVD
A DVD menu or title menu may appear on the TV screen (see page 19).

■ When playing a VIDEO CD
The menu screen may appear on the TV screen depending on the VIDEO CD. You can play the disc interactively, following the instructions on the menu screen. (PBC Playback, see page 20.)

You can turn on the player using the remote
Press I/⏻ (POWER) when the indicator above the I/⏻ (POWER) button on the front panel is lit in red.

Notes
- If you leave the player or the remote in pause or stop mode for 15 minutes, the screen saver image appears automatically. To make the screen saver image go away, press ▷. (If you want to set the screen saver function to off, see page 53.)
- The indicator above the I/⏻ (POWER) button lights up in red when the power is turned off.

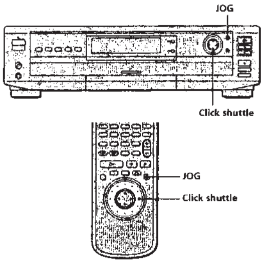


To	Operation
Select a disc	Press DISC SELECT 1 – 5.
Stop	Press ■.
Pause	Press ❚❚.
Resume play after pause	Press ❚❚ or ▷.
Go to the next chapter, track or scene in continuous play mode	Press ⏭.
Go back to the preceding chapter, track or scene in continuous play mode	Press ⏮.
Stop play and remove the disc	Press ⏏.

You can play discs in various modes such as Program Play using the on-screen menu (Control Menu). For operations of Control Menu, see page 25.

Playing at Various Speeds/Frame by Frame DVD VIDEO CD CD

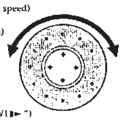
Using the click shuttle and the JOG button/indicator, you can play back a DVD/CD/VIDEO CD at various speeds or frame by frame. Each time you press JOG, it changes between shuttle mode and jog mode.



To change the playback speed (Shuttle mode)

Turn the click shuttle. The playback speed changes depending on the turning direction and angle as follows:

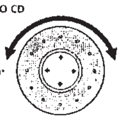
When you play back a DVD



FF2▶▶ (about 30 times the normal speed)
⇕
FF1▶▶ (about 10 times the normal speed)
⇕
×2▶ (about twice the normal speed)
⇕
PLAY▶ (Normal speed)
⇕
SLOW1❚▶ (playback direction)
⇕
SLOW2❚▶ (playback direction
⇕ – slower than "SLOW1❚▶ ")
PAUSE❚❚
⇕
SLOW2◀❚ (opposite direction
⇕ – slower than "SLOW1◀❚ ")
SLOW1◀❚ (opposite direction)
⇕
×2◀ (about twice the normal speed)
⇕
FR1◀◀ (about 10 times the normal speed)
⇕
FR2◀◀ (about 30 times the normal speed)

If you turn the click shuttle quickly, the playback speed goes to FF2▶▶/FR2◀◀ at once.

When you play back a CD/VIDEO CD



FF2▶▶ (Faster than "FF1▶▶")
⇕
FF1▶▶
⇕
×2▶ (about twice the normal speed)*
⇕
PLAY▶ (Normal speed)
⇕
SLOW1❚▶ (playback direction)**
⇕
SLOW2❚▶ (playback direction
– slower than "SLOW1❚▶ ")**
⇕
PAUSE❚❚
⇕
FR1◀◀
⇕
FR2◀◀ (Faster than "FR1◀◀")

* CD Only
** VIDEO CD Only

If you turn the click shuttle quickly, the playback speed goes to FF2▶▶/FR2◀◀ at once.

To return to continuous play
Press ▷.

Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

To play the disc frame by frame changing the playback speed (Jog mode) DVD VIDEO CD

1 **Press JOG.**
JOG lights up during jog mode. When you press JOG on the player, it pauses.

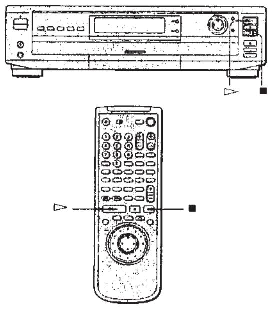
2 **Turn the click shuttle.**
Depending on the turning speed, the playback goes to frame-by-frame in the direction that the click shuttle is turned. If you turn the click shuttle with constant speed for a while, the playback speed goes to slow or normal.

To return to continuous play
Press ▷.

Notes
- The JOG indicator shows the mode of the corresponding click shuttle. For example, when the JOG indicator on the remote is not lit, the remote click shuttle will remain in the shuttle mode even if the indicator on the player is lit
- If you don't operate the click shuttle for about 20 seconds after pressing JOG, it returns to shuttle mode on the remote. On the player, it stays in jog mode.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

The player stores the point where you stopped the disc and if "RESUME" appears on the front panel display. You can resume playback from that point.
As long as you do not open the disc tray, Resume Play is available even if you turn the power off.



1 **While playing a disc, press ■ to stop playback.**
"RESUME" appears in the front panel display and "When playing next time, disc restarts from point you stopped." appears on the TV screen.
If "RESUME" does not appear, Resume Play is not available.

2 **Press ▷.**
The player starts playback from the point where you stopped the disc in Step 1.

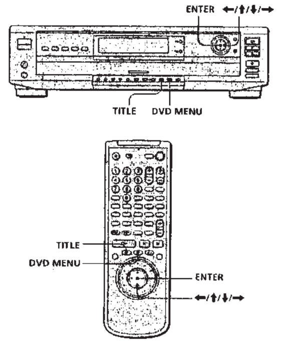
To play from the beginning of the disc
When the playing time appears on the front panel display before you start playing, press ■ to reset the playing time, then press ▷.

Notes
- Resume Play may not be available depending on the DVD.
- Resume Play is not available in Shuffle or Program Play mode.
- Depending on where you stopped the disc, the player may resume playback from a different point.
- The point where you stopped playing is cleared when:
  - you open or close the disc tray
  - you disconnect the AC power cord
  - you change the play mode
  - you start playback after selecting a title, chapter or track
  - you change the settings of "TV TYPE" in "SCREEN SETUP" in the setup display
  - you change the settings of "PARENTAL CONTROL" in "CUSTOM SETUP" in the setup display

Using the Menu for Each DVD DVD

Using the title menu

A DVD is divided into long sections of a picture or a music piece called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.



1 **Press TITLE.**
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 **Press ←/↑/↓/→ to select the title you want to play.**
Depending on the disc, you can use the number buttons to select the title.

3 **Press ENTER.**
The player starts playing the selected title.

Notes
- Depending on the DVD, you may not be able to select the title.
- Depending on the DVD, a "title menu" may simply be called a "menu" or "title " in the instructions supplied with the disc. "Press ENTER." may also be expressed as "Press SELECT."

Using the DVD menu

Some DVDs allow you to select the disc contents using the menu. When you play these DVDs, you can select the language for the subtitles, the language for the sound, etc., using the DVD menu.

1 **Press DVD MENU.**
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 **Press ←/↑/↓/→ to select the item you want to change.**
Depending on the disc, you can use the number buttons to select the item.

3 **To change other items, repeat Step 2.**

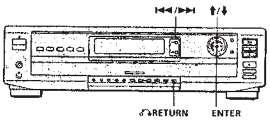
4 **Press ENTER.**

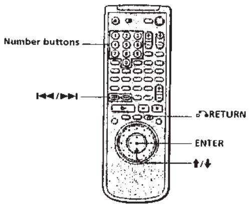
If you want to select the language for the DVD menu
Change the setting using "LANGUAGE SETUP" in the setup display. For details, see page 52.

Note
Depending on the DVD, a "DVD menu" may simply be called a "menu" in the instructions supplied with the disc.

Playing VIDEO CDs with PBC Functions (PBC Playback) VIDEO CD

When playing VIDEO CDs with PBC functions (Ver. 2.0 discs), you can enjoy simple interactive operations, operations with search functions, etc.
PBC Playback allows you to play VIDEO CDs interactively, following the menu screen on the TV screen. On this player, you can use the number buttons, ENTER, ⏮, ⏭, ↑/↓ and ↶RETURN during PBC Playback.


⏮/⏭
↑/↓
↶RETURN
ENTER


Number buttons
⏮/⏭
↶RETURN
ENTER
↑/↓

1 **Start playing a VIDEO CD with PBC functions, following Steps 1 to 4 in "Playing Discs" on page 15.**

2 **Select the item number you want.**
On the player
Press ↑/↓ to select the item number.
On the remote
Press the number button of the item you want.

3 **Press ENTER.**

4 **Follow the instructions on the menu screen for interactive operations.**
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

Going back to the menu screen
Press ↶, ⏮, or ⏭.

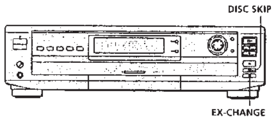
When playing VIDEO CDs with PBC functions
PBC playback starts automatically.

To cancel PBC playback of a VIDEO CD with PBC functions and play the disc in continuous play mode
There are two ways.
- Before you start playing, select the track you want using ⏮ or ⏭, then press ENTER or ▷.
- Before you start playing, select the track number using the number buttons on the remote, then press ENTER or ▷.
  "Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu screen.
  To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER." in Step 3 may be expressed as "Press SELECT." in the instructions supplied with the disc.

Replacing Discs while Playing a Disc (EX-CHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.


DISC SKIP
EX-CHANGE

1 **Press EX-CHANGE.**
The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

2 **Replace the discs in the compartments with new ones.**

3 **Press DISC SKIP.**
The disc tray turns and another two disc compartments appear.

4 **Replace the discs in the compartments with new ones.**

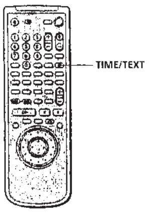
5 **Press EX-CHANGE.**
The disc tray closes.

While the disc tray is open after being opened with the EX-CHANGE button
- If the playback of the current disc ends, the player stops playing. If the disc is played in 1 DISC Repeat Play mode (page 39), the current disc starts playing again.
- In ALL DISCS Shuffle Play mode (page 38), titles/tracks/chapters are reshuffled on the current disc.
- In Program Play mode (page 36), only the titles/tracks/chapters on the current disc are played.

Note
Do not push the disc tray to close in Step 5, as you may damage the player.

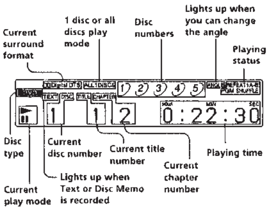
Using the Front Panel Display
i DVD VIDEO CD CD

You can check information about the disc, such as the total number of the titles or the tracks or remaining time, using the front panel display.

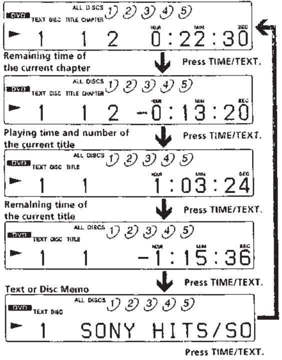


When playing back a DVD DVD

Display information while playing a disc


Current surround format
1 disc or all discs play mode
Disc numbers
Lights up when you can change the angle
Playing status
1 2 3 4 5
1 1 2 0:22:30
Disc type
Current disc number
Current title number
Current chapter number
Playing time
Lights up when Text or Disc Memo is recorded
Current play mode

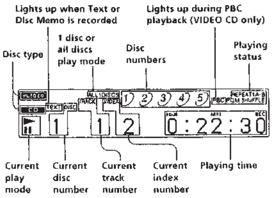
Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.


Playing time and number of the current chapter
1 1 2 0:22:30
Remaining time of the current chapter
Press TIME/TEXT.
1 1 2 -0:13:20
Playing time and number of the current title
Press TIME/TEXT.
1 1 1:03:24
Remaining time of the current title
Press TIME/TEXT.
1 1 -1:15:36
Text or Disc Memo
Press TIME/TEXT.
1 SONY HITS/SO
Press TIME/TEXT.

Notes
- Depending on the DVD, the chapter number or time may not appear or you may not be able to change the front panel display.
- During Shuffle Play or Program Play, the playing time of the title and the remaining time of the title are not displayed.

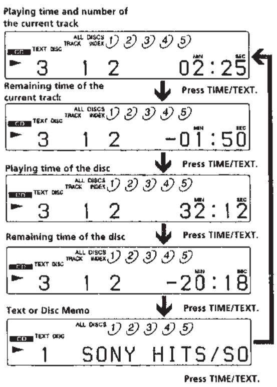
When playing back a CD/VIDEO CD VIDEO CD CD

Display information while playing a disc


Lights up when Text or Disc Memo is recorded
Lights up during PBC playback (VIDEO CD only)
Disc type
1 disc or all discs play mode
Disc numbers
Playing status
1 1 2 0:22:30
Current play mode
Current disc number
Current track number
Current index number
Playing time

When playing VIDEO CDs with PBC functions
The current scene number is displayed instead of the current track number and the current index number. In this case, the front panel display does not change when you press TIME/TEXT. If a TEXT or Disc Memo is recorded on the disc, the front panel display changes to "Text or Disc Memo" display when you press TIME/TEXT (see page 31).

Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing a disc, the display changes as shown in the following chart.

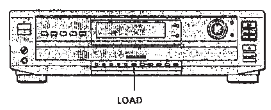

Playing time and number of the current track
3 1 2 02:25
Remaining time of the current track
Press TIME/TEXT.
3 1 2 -01:50
Playing time of the disc
Press TIME/TEXT.
3 1 2 32:12
Remaining time of the disc
Press TIME/TEXT.
3 1 2 -20:18
Text or Disc Memo
Press TIME/TEXT.
1 SONY HITS/SO
Press TIME/TEXT.

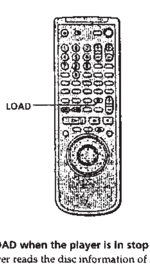
Note
While you are doing Shuffle Play, Program Play, or PBC playback, the playing time of the disc and the remaining time of the disc are not displayed.

Displaying the Disc Information
i DVD VIDEO CD CD

You can check the contents of each disc loaded.

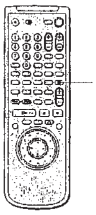
Loading the disc information



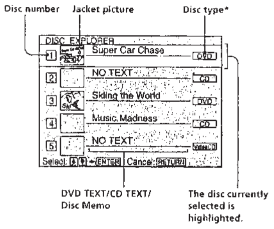


Press LOAD when the player is in stop mode.
The player reads the disc information of all the discs and loads it into memory so that the disc type, titles and other text information can be displayed.

Displaying the information of the loaded discs


DISC
EXPLORER

Press DISC EXPLORER in stop mode.
The jacket picture, type of disc and text information are displayed.


Disc number
Jacket picture
Disc type*
DISC EXPLORER
1 Super Car Chase DVD
2 NO TEXT CD
3 Skiing the World DVD
4 Music Madness CD
5 NO TEXT VideoCD
Select: ↑↓ → ENTER Cancel: RETURN
DVD TEXT/CD TEXT/
Disc Memo
The disc currently
selected is
highlighted.

* "?" appears when the player has not loaded the disc information in the memory.

To play the disc
Select the disc using ↑/↓, then press ENTER.
The DISC EXPLORER disappears and playback starts.

To cancel using the DISC EXPLORER
Press ↶RETURN.

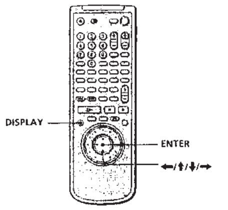
Notes
- You cannot display the DISC EXPLORER during playback.
- If a disc contains the jacket picture, DVD TEXT or CD TEXT, they appear on the Disc Explorer.

Using Various Functions with the Control Menu

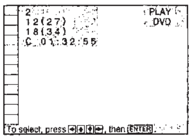
This chapter describes how to play discs in various modes and how to use the convenient features of the on-screen menu (Control Menu).

Using the Control Menu Display 🅘 DVD VIDEO CD CD

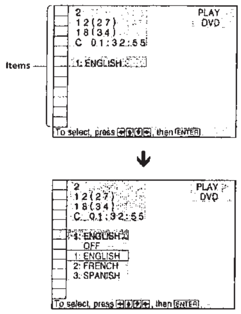
Using the Control Menu display, you can select the start point, label a disc, change the angles, adjust the picture, set for Digital Cinema Sound, etc.
The items are different depending on the kind of disc.
For details on each Control Menu display item, see pages 27 to 48.


DISPLAY
ENTER
←/↑/↓/→

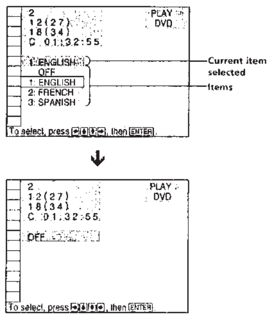
1 Press DISPLAY to show the Control Menu display on the TV screen.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
To select, press ←↑↓→, then ENTER.

2 Select the item you want using ↑/↓, then press → or ENTER.


Items
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1: ENGLISH
To select, press ←↑↓→, then ENTER.
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1: ENGLISH
OFF
1: ENGLISH
2: FRENCH
3: SPANISH
To select, press ←↑↓→, then ENTER.

3 Select the item you want using ↑/↓, then press ENTER.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1: ENGLISH
OFF
1: ENGLISH
2: FRENCH
3: SPANISH
Current item
selected
Items
To select, press ←↑↓→, then ENTER.
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
OFF
To select, press ←↑↓→, then ENTER.

Note
Some Control Menu display items require operations other than selecting the setting. For details on these items, see the relevant pages.

To cancel using the Control Menu display
Press ↶RETURN.

To display other items
Each time you press DISPLAY, the Control Menu display changes as follows:

→Control Menu display 1
↓
Control Menu display 2
(The items except the first three items from the top are changed to other items.)
↓
ADVANCED display (see page 48)
↓
Control Menu display off

💡You can display some items using the remote
Some items can be displayed by pressing the button of the remote. In this case, only the item you selected is displayed. For the item and operations using the remote, see the pages of each item.

Control Menu Item List

DISC (page 28)
TITLE (DVD only) (page 28)
CHAPTER (DVD only) (page 28)
TRACK (VIDEO CD/CD only) (page 28)
INDEX (VIDEO CD/CD only) (page 28)
SCENE (VIDEO CD during PBC playback only) (page 28)
You can search by selecting the disc/title/chapter/track/index/scene.

TIME/TEXT (pages 29, 30, 31)
TIME/MEMO (pages 29, 30, 31)
You can check the playing time and remaining time of the current title/chapter/track and the total remaining time of the disc.
You can search by inputting the time code.
You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display. When the DVD TEXT or CD TEXT is not recorded on the disc, you can label the disc as a Disc Memo and check it.

AUDIO (page 33)
With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD.
With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers.

SUBTITLE (DVD only) (page 34)
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want.

ANGLE (DVD only) (page 35)
With DVDs on which various angles (multi-angles) are recorded, you can change the angles on the scene for which multi-angles are recorded.

1/ALL DISCS (page 36)
Select the 1 disc play mode or all discs play mode to set Program Play, Shuffle Play and Repeat Play.

PROGRAM (page 36)
You can play the contents of the disc in the order you want by arranging the order of the titles, chapters or tracks on one disc or on all discs to create your own program.

SHUFFLE (page 38)
You can have the player "shuffle" titles, chapters or tracks on one disc or on all discs, and play them in a random order. The playing order may differ from the previous "shuffling."

REPEAT (page 39)
You can play all discs, all the titles/tracks on a disc, or a single title/chapter/track repeatedly.

A-B REPEAT (page 40)
You can play a specific portion of a title, chapter, or track repeatedly.

VIRTUAL 3D SURROUND (page 42)
Select the mode to enjoy multi-channel surround sound such as Dolby Digital.
Even if you connect only front speakers, Virtual Enhanced Surround (VES) lets you enjoy 3D sound by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers.
When you connect 2 front speakers and 2 rear speakers, you can use the 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR).
You can feel the more effective 3D sound when you connect a receiver (amplifier) with 5.1 channel inputs, 2 front speakers, 2 rear speakers, 1 center speaker and 1 subwoofer.

DNR (DVD/VIDEO CD only) (page 44)
You can make the picture clearer by reducing the picture noise.

VIDEO EQ (DVD/VIDEO CD only) (page 44)
You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want.

Control Menu Item List

ANGLE VIEWER (DVD only) (page 46)
With DVDs on which various angles (multi-angles) for a scene are recorded, you can display all the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle directly.

STROBE PLAYBACK (DVD/VIDEO CD only) (page 46)
You can display 9 consecutive sections of the disc on the screen. In this case, the sections show still images.

TITLE VIEWER (DVD only) (page 47)

CHAPTER VIEWER (DVD only) (page 47)

TRACK VIEWER (VIDEO CD only) (page 47)
You can check the titles, chapters and tracks of the disc on the screen divided in 9 sections, and start playback from the chosen title, chapter or track.

BOOKMARK (DVD/VIDEO CD only) (page 47)
You can have the player store specific portions of the disc in memory and play them immediately whenever you want without the need to search.

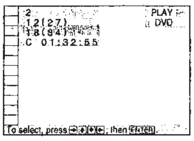
ADVANCED (DVD only) (page 48)
You can check the play information about the bit rate, bit rate history or the position where the disc is played (layer).

Searching for the Disc/Title/Chapter/Track/Index/Scene

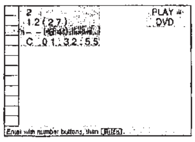
DVD VIDEO CD CD

You can search by selecting the disc/title/chapter/track/index/scene.
Select "DISC," "TITLE," " CHAPTER," " TRACK", "INDEX" or "SCENE" after pressing DISPLAY.
When you play back a DVD, "TITLE" and " CHAPTER" are displayed.
When you play back a VIDEO CD/CD, "TRACK" and "INDEX" are displayed. When you play back a VIDEO CD with PBC functions, "SCENE" is displayed.

1 Select "DISC," "TITLE," "CHAPTER," "TRACK," "INDEX" or "SCENE" using ↑/↓.
"∗∗ (∗∗)" is highlighted. (∗∗ means optional number in this manual.) Numbers in parentheses indicate the total number of titles, chapters, tracks, indexes or scenes.


2
12(27)
18(94)
C 01:32:55
PLAY
DVD
To select, press ←↑↓→, then ENTER.

2 Press → or ENTER.
"∗∗ (∗∗)" is changed to "— — (∗∗)".


2
12(27)
C 01:32:55
PLAY
DVD
Enter with number buttons, then ENTER.

3 Select the number of the disc, title, chapter, track, index or scene you want to search for using the number buttons, then press ENTER.
The player starts searching. To cancel the number, press CLEAR before pressing ENTER.

To cancel selecting
Press ↶RETURN.

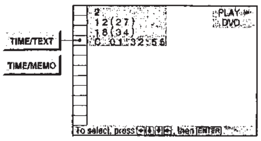
💡You can select a disc using the player or the remote
Press DISC SELECT 1 – 5 on the player or press DISC 1 – DISC 5 on the remote.

Notes
- The number of titles, chapters or tracks displayed is that of the titles, chapters or tracks recorded on a disc.
- The index numbers are not displayed during PBC playback of VIDEO CDs.

Checking the Playing Time and Remaining Time

DVD VIDEO CD CD

You can check the playing time and remaining time of the current title/chapter/track and the total remaining time of the disc.
Press DISPLAY. Then press TIME/TEXT to change the time information.
You can also check the DVD TEXT, CD TEXT and Disc Memo, and label the Disc Memo. See page 31.


TIME/TEXT
TIME/MEMO
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
To select, press ←↑↓→, then ENTER.

When playing a DVD
■TIME/TEXT or TIME/MEMO
- C ∗∗:∗∗:∗∗ : Playing time of the current chapter
- C –∗∗:∗∗:∗∗ : Remaining time of the current chapter
- T ∗∗:∗∗:∗∗ : Playing time of the current title
- T –∗∗:∗∗:∗∗ : Remaining time of the current title

When playing a VIDEO CD (during PBC playback)
■TIME/MEMO
- ∗∗:∗∗ : Playing time of the current scene

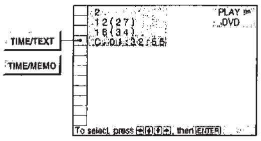
When playing a VIDEO CD (in continuous play) or CD
■TIME/TEXT or TIME/MEMO
- T ∗∗:∗∗ : Playing time of the current track
- T –∗∗:∗∗ : Remaining time of the current track
- D ∗∗:∗∗ : Playing time of the current disc
- D –∗∗:∗∗ : Remaining time of the current disc

💡You can display the "TIME/TEXT" or "TIME/MEMO" display quickly
Press TIME/TEXT on the remote. Each time you press the button, the time information changes.

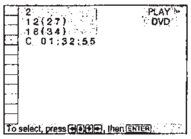
Selecting a Start Point Using the Time Code

DVD

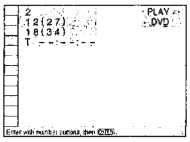
You can search by inputting the time code.
Select "TIME/TEXT" or "TIME/MEMO" after pressing DISPLAY.
The time code corresponds to the approximate actual playing time. For example, to search for a scene 2 hours 30 minutes 20 seconds past the beginning, input 2:30:20.


TIME/TEXT
TIME/MEMO
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
To select, press ←↑↓→, then ENTER.

1 Select "C ∗∗:∗∗:∗∗ " (playing time of the current chapter).


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
To select, press ←↑↓→, then ENTER.

2 Press → or ENTER.
Time code changes to "T – – : – – : – –".


2
12(27)
18(34)
T – – : – – : – –
PLAY
DVD
Enter with number buttons, then ENTER.

3 Input the time code using the number buttons, then press ENTER.
The player starts searching. To cancel the number, press CLEAR before pressing ENTER.

To cancel inputting
Press ↶RETURN.

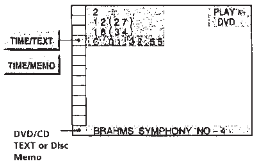
💡You can display the "TIME/TEXT" or "TIME/MEMO" display quickly
Press TIME/TEXT.

Note
When you input the time code, input the playing time of the title.

Checking the Information of the Disc

DVD VIDEO CD CD

You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display. When the DVD TEXT or CD TEXT is not recorded on the disc, you can label the disc as a Disc Memo and then check it.
DVD TEXT and CD TEXT are information recorded on the disc which you cannot change.
Press DISPLAY. If the disc has DVD TEXT or CD TEXT recorded, "TIME/TEXT" appears. If a Disc Memo can be input in the disc, "TIME/MEMO" appears. Press TIME/TEXT until DVD/CD TEXT or Disc Memo is displayed.
The information is displayed at the bottom of the display.


TIME/TEXT
TIME/MEMO
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
BRAHMS SYMPHONY NO – 4
DVD/CD TEXT or Disc Memo

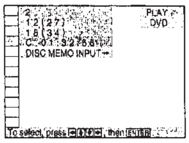
💡You can display the "TIME/TEXT" or "TIME/MEMO" display quickly
Press TIME/TEXT. To display DVD/CD TEXT or Disc Memo, press TIME/TEXT until DVD/CD TEXT or Disc Memo is displayed.

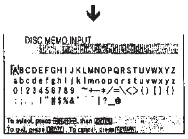
Note
The DVD TEXT only in English is displayed.

Labeling discs (Disc Memo)

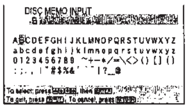
When DVD TEXT or CD TEXT is not recorded on the disc, you can change the name of the disc by labeling it on the on-screen display and put a personal title on the disc. You can input up to 16 characters per disc each.
You can also have the player display the Disc Memo each time you select the disc. The Disc Memo can be anything you like, such as a title, musician's name, category or date of purchase.

1 Select "DISC MEMO INPUT→" in "TIME/MEMO."
The DISC MEMO INPUT display appears.

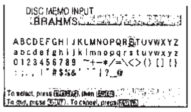

2
12(27)
18(34)
C 01:32:55
DISC MEMO INPUT→
PLAY
DVD
To select, press ←↑↓→, then ENTER.


DISC MEMO INPUT
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789 ~+–∗/=\<>() [] ()
:;.,!"#$%&'``|?_@
To select, press ←↑↓→, then ENTER.
To quit, press DISPLAY. To cancel, press RETURN.

2 Select the character by pressing ←/↑/↓/→ or by turning the click shuttle.
The selected character changes color.

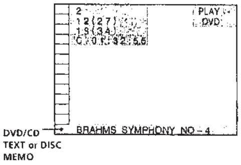

DISC MEMO INPUT
B
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789 ~+–∗/=\<>() [] ()
:;.,!"#$%&'``|?_@
To select, press ←↑↓→, then ENTER.
To quit, press DISPLAY. To cancel, press RETURN.

3 **Press ENTER.**


DISC MEMO INPUT
BRAHMS
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789 ~+-*/=\<>() [] {}
:;.,!"#$%&'``|?_@
To select, press ←↑↓→, then ENTER.
To quit, press INPUT. To cancel, press RETURN.

4 **Repeat steps 2 and 3 to input other characters.**

5 **When you have entered all the characters for the disc label, press INPUT on the remote.**
The disc label is stored.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
BRAHMS SYMPHONY NO - 4
DVD/CD TEXT or DISC MEMO

To correct the characters

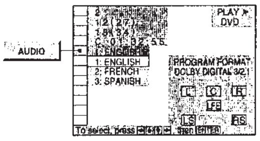
- To erase the characters:
  1. Move the cursor to the character you want to erase by pressing I◀◀ / ▶▶I.
  2. Press CLEAR.
- To insert or overwrite the characters:
  1. Move the cursor to the character you want to correct by pressing I◀◀ / ▶▶I.
  2. Select the correct character by pressing ←/↑/↓/→ or by turning the click shuttle.
  3. To insert the character, press ENTER.
     To overwrite, don't press ENTER but move the cursor by pressing ▶▶I.

You can display the Disc Memo input display directly
Press INPUT on the remote or the player.

Note
You can label up to 200 discs. When you have the player store over 200 discs in memory, each new Disc Memo erases the oldest Disc Memo from those first stored.

Changing the Sounds DVD VIDEO CD CD

With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD. With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. In this case, the sound loses the stereo effect. For example, with a disc containing a song, the right channel may output the vocals and the left channel may output the instrumental. If you only want to hear the instrumental, you can select the left channel and hear it from both speakers.
Select "AUDIO" after pressing DISPLAY.


AUDIO
2
12(27)
18(34)
C 01:32:55
1: ENGLISH
PLAY
DVD
1: ENGLISH
2: FRENCH
3: SPANISH
PROGRAM FORMAT
DOLBY DIGITAL 3/2.1
L C R
LFE
LS RS
To select, press ←↑↓→, then ENTER.

■AUDIO

When playing a DVD
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they represent the language code. Select the language code from the list on page 72.

When playing a VIDEO CD or a CD

- STEREO : The standard stereo sound
- 1/L : The sound of the left channel (monaural)
- 2/R : The sound of the right channel (monaural)

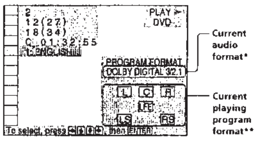
You can display "AUDIO" display quickly
Press AUDIO on the remote.

Notes

- Depending on the DVD, you may not be able to change the languages even if multilingual sounds are recorded on the DVD.
- While playing the CD/VIDEO CD, the standard stereo playback will be resumed when:
  - you open or close the disc tray
  - you turn the power off
- While playing the DVD, the sound may be changed when:
  - you open or close the disc tray
  - you change the title
- If the language is displayed as a 4 digit number, refer to the language code list on page 72.

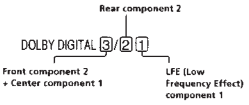
Displaying the audio information of the disc DVD

When you select "AUDIO," the playing channels are displayed on the screen.
In Dolby Digital format, the signals from monaural to 5.1 channels can be recorded on a DVD. Depending on the DVD the number of the recorded channels may be different.


2
12(27)
18(34)
C 01:32:55
1: ENGLISH
PLAY
DVD
PROGRAM FORMAT
DOLBY DIGITAL 3/2.1
L C R
LFE
LS RS
To select, press ←↑↓→, then ENTER.
Current audio format*
Current playing program format**

* "PCM," "DTS" or "DOLBY DIGITAL" is displayed. In "DOLBY DIGITAL" case, the channels in the playing track are displayed by number as follows:

The case of Dolby Digital 5.1 ch:

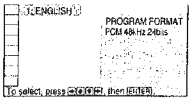

Rear component 2
DOLBY DIGITAL 3/2 1
Front component 2 + Center component 1
LFE (Low Frequency Effect) component 1

** The letters in the program format display mean the following:

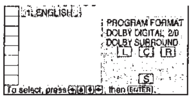
L:	Front (L)
R:	Front (R)
C:	Center (monaural)
LS:	Rear (L)
RS:	Rear (R)
S:	Rear (monaural) – the rear component of the Dolby Surround processed stereo signal and the Dolby Digital signal.
LFE:	LFE (Low Frequency Effects)

The display examples are as follows:

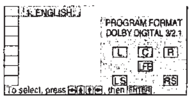
- PCM (stereo)


1: ENGLISH
PROGRAM FORMAT
PCM 48kHz 24bits
To select, press ←↑↓→, then ENTER.

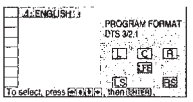
- Dolby Surround


1: ENGLISH
PROGRAM FORMAT
DOLBY DIGITAL 2/0
DOLBY SURROUND
L C R
S
To select, press ←↑↓→, then ENTER.

- Dolby Digital 5.1ch


1: ENGLISH
PROGRAM FORMAT
DOLBY DIGITAL 3/2.1
L C R
LFE
LS RS
To select, press ←↑↓→, then ENTER.

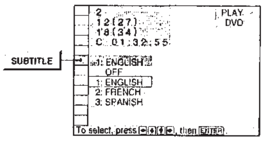
- DTS


4: ENGLISH
PROGRAM FORMAT
DTS 3/2.1
L C R
LFE
LS RS
To select, press ←↑↓→, then ENTER.

You can find Dolby Surround-encoded software by looking at the packaging
Use discs with the DOLBY DIGITAL logo. In order to enjoy Dolby Digital playback you must use discs bearing this logo.

Displaying the Subtitles DVD

With DVDs on which subtitles are recorded, you can turn the subtitles on and off whenever you want while playing the DVD.
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want. For example, you can select the language you want to master and turn the subtitles on for better understanding.
Select "SUBTITLE" after pressing DISPLAY.


SUBTITLE
2
12(27)
18(34)
C 01:32:55
1: ENGLISH
PLAY
DVD
OFF
1: ENGLISH
2: FRENCH
3: SPANISH
To select, press ←↑↓→, then ENTER.

■SUBTITLE
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they indicate the language code. Select the language code from the list on page 72.

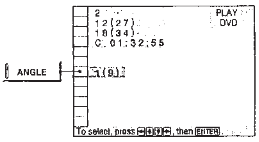
You can display the "SUBTITLE" display quickly
Press SUBTITLE on the remote. Each time you press the button, the item changes.

Notes

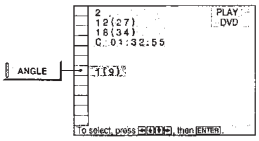
- When playing a DVD on which no subtitles are recorded, no subtitles appear.
- Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
- Depending on the DVD, you may not be able to turn the subtitles off.
- If the language is displayed as a 4-digit number, refer to the language code list on page 72.
- The type and number of languages for subtitles vary from disc to disc.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.
- While playing the DVD, the subtitle may change when:
  - you open or close the disc tray
  - you change the title

Changing the Angles DVD

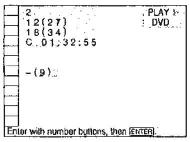
With DVDs on which various angles (multi-angles) for a scene are recorded, you can change the angles. For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train or from the right window without having the train's movement interrupted.
Select "ANGLE" after pressing DISPLAY. When the angles can be changed, the indicator of the "ANGLE" lights in green.


ANGLE
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1(9)
To select, press ←↑↓→, then ENTER.

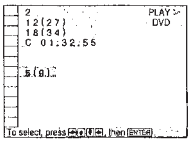
1 **Select "ANGLE."**


ANGLE
2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1(9)
To select, press ←↑↓→, then ENTER.

2 **Press →.**
The number of the angle changes to "–." The number in parentheses indicates the total number of angles.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
-(9)
Enter with number buttons, then ENTER.

3 **Select the number of the angles using the number buttons or ↑/↓, then press ENTER.**
The angle is changed to the selected angle.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
5(9)
To select, press ←↑↓→, then ENTER.

Notes

- The number of angles varies from disc to disc or from scene to scene. The number of angles that can be changed on a scene is that of angles recorded for that scene.
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

You can specify the angle beforehand
Specify the angle when "ANGLE" is not displayed on the front panel display. When a scene on which multi-angles are recorded comes, the angle is automatically selected.

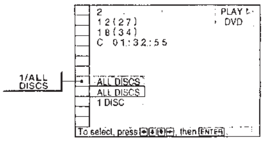
You can select the angle directly
Press ANGLE on the remote. Each time you press the button, the angle changes.

You can display different angles simultaneously (ANGLE VIEWER)
You can display all the angles recorded on the disc on the same screen, and start playback in continuous mode from the chosen angle directly. The angles are displayed on a screen divided in 9 sections. For details, see page 46.

Selecting the Disc Mode (1 Disc or All Discs)

DVD VIDEO CD CD

Before setting Program Play, Shuffle Play, or Repeat Play, you need select whether to set those play modes on one disc or all discs.
Select "1/ALL DISCS" after pressing DISPLAY.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
1/ALL DISCS
ALL DISCS
ALL DISCS
1 DISC
To select, press ←↑↓→, then ENTER.

■1/ALL DISCS

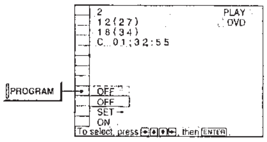
- ALL DISCS: allows you to set Program Play, Shuffle Play or Repeat Play for all the discs loaded.
- 1 DISC: allows you to set Program Play, Shuffle Play or Repeat Play for 1 disc only.

You can select the mode using the button of the player or remote
Press 1/ALL DISCS. Each time you press the button, 1 DISC or ALL DISCS mode is selected.

Creating Your Own Program (Program Play)

DVD VIDEO CD CD

You can play the contents of one disc or all discs in the order you want by arranging the order of the titles, chapters or tracks and create your own program. One program can be stored in the player and contain up to 99 titles, chapters and tracks.
Select "PROGRAM" after pressing DISPLAY. When you select "ON," the indicator of the "PROGRAM" lights in green.

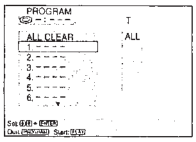

2
12(27)
18(34)
C 01:32:55
PLAY
DVD
PROGRAM
OFF
OFF
SET →
ON
To select, press ←↑↓→, then ENTER.

■PROGRAM

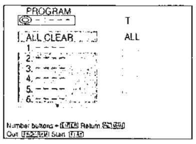
- OFF: plays normal.
- SET➡: allows you to create your own program.
- ON: plays Program Play.

Creating the program

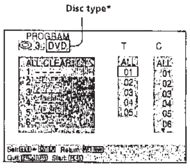
1 **Select "SET➡" in "PROGRAM."**
The programming display appears.


PROGRAM
T
ALL CLEAR
ALL
1. – – – –
2. – – – –
3. – – – –
4. – – – –
5. – – – –
6. – – – –
Set ↑/↓ + ENTER
Quit PROGRAM Start PLAY

2 **Press ENTER.**


PROGRAM
T
ALL CLEAR
ALL
1. – – – –
2. – – – –
3. – – – –
4. – – – –
5. – – – –
6. – – – –
Number buttons + ENTER Return RETURN
Quit PROGRAM Start PLAY

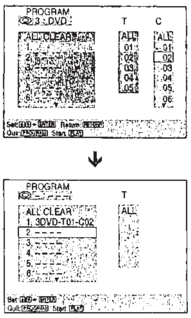
3 **Press the number button to select the disc, then press ENTER.**
You can play the only currently selected disc when you select "1 DISC" in "1/ALL DISCS." To program more than 1 disc, press 1/ALL DISCS and select "ALL DISCS."


Disc type*
PROGRAM
3: DVD
T
C
ALL CLEAR
ALL
01
02
03
04
05
06
Set ↑/↓ + ENTER Return RETURN
Quit PROGRAM Start PLAY

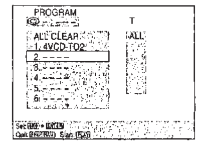
* "?" appears when the player has not loaded the disc information in the memory.

4 **Select the title, chapter or track you want to program using ↑/↓, then press ENTER.**
For example, select Title1, Chapter 2 in Disc 3.
(You can also use the number buttons and ENTER button to select. In this case, the selected number is displayed on the screen.)

■When playing a DVD
When both titles and chapters are recorded on the disc, select the title, then the chapter.


PROGRAM
3: DVD
T
C
ALL CLEAR
ALL
01
02
03
04
05
06
Set ↑/↓ + ENTER Return RETURN
Quit PROGRAM Start PLAY
PROGRAM
T
ALL CLEAR
ALL
1. 3DVD-T01-C02
2. – – – –
3.
4.
5.
6.
Set ↑/↓ + ENTER
Quit PROGRAM Start PLAY

■When playing a VIDEO CD or CD
Select the track you want to program.


PROGRAM
T
ALL CLEAR
ALL
1. 4VCD-T02
2. – – – –
3.
4.
5.
6.
Set ↑/↓ + ENTER
Quit PROGRAM Start PLAY

5 **To program other discs, titles, chapters or tracks, repeat Steps 3 and 4.**
The programmed discs, titles, chapters or tracks are displayed from 2 in order.

6 **Press ▷ to start Program Play.**

To return to previous item
If you are selecting a disc, title, track or chapter, press ↶RETURN to return to previous item.

To cancel Program Play
Press CLEAR.

To cancel programming
Press PROGRAM.

To change programming
To change the disc, select the program number you want to change using ↑/↓ after Step 1 or 4, then press ENTER. Then do Steps 3 and 4.
To change the title, chapter and track, select the desired one in Step 4.

To cancel the programmed order
To cancel all the titles, chapters or tracks in the programmed order, select "ALL CLEAR" after Step 1 or 4, then press ENTER.
To cancel the selected program, select the program using ↑/↓ after Step 1 or 4, then press CLEAR.

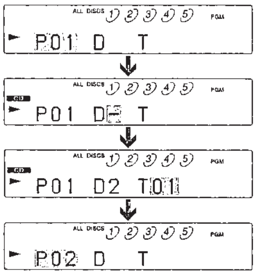
The program remains even after the Program Play ends
When you press ▷, you can play the same program again.

You can do Repeat Play or Shuffle Play of the programmed titles, chapters or tracks
During Program Play, press REPEAT or SHUFFLE. Or set "REPEAT" or "SHUFFLE" to "ON" in the Control Menu display.

You can display the "PROGRAM" display quickly
Press PROGRAM on the remote or press PGM on the player.

You can load the disc information
Press LOAD in stop mode (see page 23) so that the player reads and loads the disc information.

You can select discs, titles, chapters and tracks for the program by looking at the front panel display
You can program by looking at the front panel display instead of using the programming display on the TV screen.
When you select Track 2 in CD 2 for Program 1, the front panel display will appear as follows:


ALL DISCS 1 2 3 4 5 PGM
P01 D T
P01 D T
P01 D2 T01
P02 D T
CD

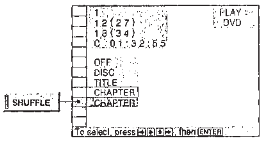
Notes

- The program is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Program Play depending on the DVD.
- While you are doing PBC playback, you cannot set a program unless you stop playback first.

Playing in Random Order (Shuffle Play)

DVD VIDEO CD CD

You can have the player "shuffle" discs, titles or tracks and play them in a random order. The playing order may differ from the previous "shuffling."
Select "SHUFFLE" after pressing DISPLAY. When you select "ON," the indicator of the "SHUFFLE" lights in green.


1
12(27)
18(34)
C 01:32:55
PLAY
DVD
OFF
DISC
TITLE
CHAPTER
SHUFFLE
CHAPTER
To select, press ←↑↓→, then ENTER.

■SHUFFLE
Selects the setting of Shuffle Play.

When playing a DVD and when Program Play is set to OFF

- OFF: does not play a disc in random order.
- DISC*: player "shuffles" discs and plays in a random order.
- TITLE: player "shuffles" titles and plays in a random order.
- CHAPTER: player "shuffles" chapters and plays in a random order.

When playing a VIDEO CD, CD or DVD (when Program Play is set to ON)

- OFF: does not play a disc in random order.
- ON: player "shuffles" titles or tracks and plays in a random order.

When playing a VIDEO CD or CD (when Program Play is set to OFF)

- OFF: does not play a disc in random order.
- DISC*: player "shuffles" discs and plays in a random order.
- TRACK: player "shuffles" tracks and plays in a random order.

* Appears only when you select "ALL DISCS" in "1/ALL DISCS."

To cancel Shuffle Play
Press CLEAR.

You can set Shuffle Play during stop
After selecting the item of "SHUFFLE," press ▷.
The player starts Shuffle Play.

You can display the "SHUFFLE" display quickly
Press SHUFFLE on the player or the remote.

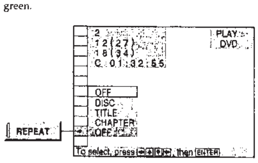
Notes

- Shuffle Play is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Shuffle Play depending on the DVD.
- Up to 50 chapters in a disc can be played in a random order when "CHAPTER" is selected.

Playing Repeatedly (Repeat Play)

DVD VIDEO CD CD

You can play all discs, all the titles/tracks on a disc or a single title/chapter/track.
In Shuffle or Program Play mode, the player repeats the titles or tracks in the shuffled or programmed order.
You cannot do Repeat Play during PBC playback of VIDEO CDs (page 20).
You may not be able to do Repeat Play depending on the DVD.
Select "REPEAT" after pressing DISPLAY. When you do not select "OFF," the indicator of the "REPEAT" lights in green.


2
12(27)
18(34)
C 01:32:55
PLAY
DVD
OFF
DISC
TITLE
CHAPTER
REPEAT
OFF
To select, press ←↑↓→, then ENTER.

■REPEAT
Selects the setting of Repeat Play.

When playing a DVD and when Program Play and Shuffle Play are set to OFF

- OFF: does not play repeatedly.
- DISC: repeats all titles on the selected disc when you select "1 DISC" in "1/ALL DISCS," and repeats all titles on all discs when you select "ALL DISCS."
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

When playing a VIDEO CD/CD and when Program Play and Shuffle Play are set to OFF

- OFF: does not play repeatedly.
- DISC: repeats all tracks on the selected disc when you select "1 DISC" in "1/ALL DISCS," and repeats all tracks on all discs when you select "ALL DISCS."
- TRACK: repeats the current track.

When Program Play or Shuffle Play is set to ON

- OFF: does not play repeatedly.
- ON: repeats Program Play or Shuffle Play.

To cancel Repeat Play
Press CLEAR.

Playing Repeatedly (Repeat Play)

You can set Repeat Play during stop
After selecting the item of "REPEAT," press ▷.
The player starts Repeat Play.

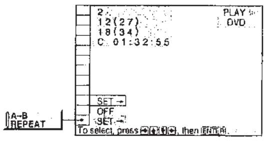
You can display the "REPEAT" display quickly
Press REPEAT.

Note
Repeat play is canceled when you turn the power off.

Repeating a Specific Portion (A←→B Repeat)

DVD VIDEO CD CD

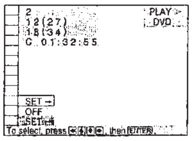
You can play a specific portion of a title, chapter, track repeatedly. This is useful when you want to memorize lyrics.
During PBC Playback of VIDEO CDs (page 20), this function is available only while playing moving pictures.
You may not be able to do A←→B Repeat Play depending on the DVD.
Select "A-B REPEAT" after pressing DISPLAY. During A←→B Repeat Play, the indicator of the "A-B REPEAT" lights in green.

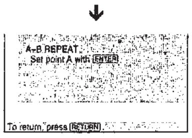


■A-B REPEAT
- SET→: sets the A and B points.
- OFF: does not play a specific portion of a title/chapter/track repeatedly.

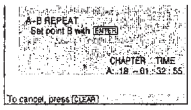
Setting a portion for A←→B repeat

1 Select "SET→" in "A-B REPEAT."
The A←→B REPEAT setting display appears.

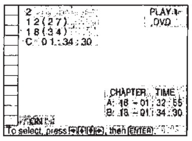




2 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



3 When you reach the ending point (point B), press ENTER again.
The setting points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A←→B repeat play.



To cancel A←→B Repeat Play
Press CLEAR.

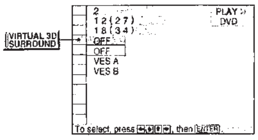
Notes
- You can set A←→B Repeat on only one specific portion.
- A←→B Repeat is canceled when:
  - you open or close the disc tray
  - you turn the power off
- When you set A←→B Repeat, the settings for Shuffle Play and Program Play are canceled.
- You may not be able to set A←→B Repeat, depending on the scene of the DVD or the VIDEO CD.
- You cannot set the start point (point A) on one disc and ending point (point B) on other disc.

Setting for Digital Cinema Sound

DVD VIDEO CD CD

Select the mode to enjoy multi channel surround sound such as Dolby Digital.
Even if you connect only front speakers, Virtual Enhanced Surround lets you enjoy 3D sound by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers.
When you connect 2 front speakers and 2 rear speakers, use 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR).
You can feel the more effective 3D sound when you connect a receiver (amplifier) with 5.1 channel inputs, 2 front speakers, 2 rear speakers, 1 center speaker and 1 subwoofer.
Select "VIRTUAL 3D SURROUND" after pressing DISPLAY twice. When you select the item except "OFF," the indicator of the "VIRTUAL 3D SURROUND " lights in green.

Note
To enjoy the original Dolby Digital sound through the 5.1CH OUTPUT connectors, set each speaker position or distance, etc. For details on setting each speaker, see page 59.



■VIRTUAL 3D SURROUND
Select the desired item. For details on each item, see "Effects of each item."
- OFF
- VES A*
- VES B*
- NORMAL SURROUND
- ENHANCED SURROUND
- VIRTUAL REAR SHIFT
- VIRTUAL MULTI REAR

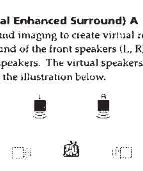
* These settings also effect the output from the LINE OUT (AUDIO 1, 2) connectors.

Note
The items displayed are different depending on the settings of "SPEAKER SETUP" (page 59).
You can select only "OFF," "VES A" or "VES B" when you play back a DVD and set "NONE" in "REAR" in "SIZE" under "SPEAKER SETUP" in the setup display.

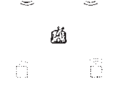
Effects of each item

OFF
Outputs all channel signals recorded on the disc. For example, outputs 2-channel signals for stereo sound of the CD or 5-channel signals for Dolby Digital sound of the DVD. When you connect fewer than 5 (+1) speakers, the player distributes the output signal for the missing speaker to other speakers appropriately.

VES (Virtual Enhanced Surround) A
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



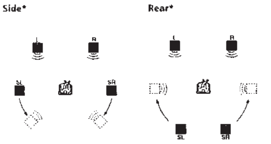
VES (Virtual Enhanced Surround) B
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



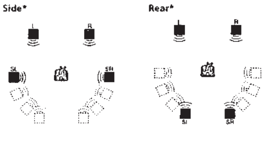
NORMAL SURROUND
Software with 2 channel audio signals, is decoded with Dolby Pro Logic to create surround effects.

ENHANCED SURROUND
Provides a greater sense of presence from Pro Logic source with monaural rear channel sound. Produces a stereo like effect in the rear channels.

VIRTUAL REAR SHIFT
Uses 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position. The virtual speakers are reproduced as shown in the illustration below. The shift position differs according to the setting of the rear speaker position.



VIRTUAL MULTI REAR
Uses 3D sound imaging to create an array of virtual rear speakers from a single pair of actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The position of the virtual rear speakers differs according to the setting of the rear speaker position.



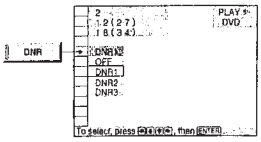
* See page 59 for details on how to set the rear speaker position.

L: Front speaker (left)
R: Front speaker (right)
SL: Rear speaker (left)
SR: Rear speaker (right)
⬚: Virtual speaker

Notes
- Some discs do not have rear sound. In this case, you cannot get the 3D surround effect.
- When you select an item, the sound cuts off for a moment.
- When the playing signal does not contain the surround component, the effects may be difficult to hear even if you select "VES A" or "VES B."
- If you connect the front speakers only, "NORMAL SURROUND," "ENHANCED SURROUND," "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" cannot be selected.
- Set the front speakers to form an equilateral triangle including the listening position, or the effects may be difficult to hear even if you select "VES A" or "VES B."
- In case that the player outputs the signal from DIGITAL OUT (OPTICAL, COAXIAL), the surround effect will be heard only when you set "DOLBY DIGITAL" to "D-PCM" in "AUDIO SETUP."
- When you play sound tracks with 96 kHz sampling frequency, be sure to select "OFF," or the output signals will be converted to 48 kHz (sampling frequency). (Except when the player outputs the audio signal from DIGITAL OUT (OPTICAL, COAXIAL).)
- When you connect a center speaker and a subwoofer, you can also hear the sound from the center speaker and the subwoofer. When you select "VES A" or "VES B," the player does not output the sound from the center speaker.
- When you select "VES A" or "VES B," set the surround settings of the connected units such as the amplifier to OFF.

Reducing the Picture Noise (DNR: Digital Video Noise Reduction) DVD VIDEO CD

You can make the picture clearer by reducing the picture noise of the background.
Select "DNR" after pressing DISPLAY twice.
When you select "DNR1," "DNR2," or "DNR3," the indicator of the "DNR" lights in green.

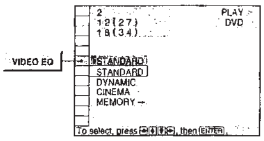

2
12(27)
18(34)
PLAY
DVD
DNR
DNR1
OFF
DNR1
DNR2
DNR3
To select, press ←↑↓→, then ENTER

■DNR
As the value increases, the picture noise will be reduced. However, afterimages may increase.
- OFF: turns off the DNR function
- DNR1
- DNR2
- DNR3

Notes
- Depending on the disc, the effect may be difficult to tell.
- If the afterimages appear on the TV screen, set the noise reduction function to off on your TV. Then set "DNR" to "OFF" on the Control Menu display.

Adjustments for Playback Picture (VIDEO EQ: Video Equalizer) DVD VIDEO CD

You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want. Choose one of the video modes whichever best suits the program you are watching.
When you select "MEMORY➡" in a menu item, adjust the value.
Select "VIDEO EQ" after pressing DISPLAY twice.

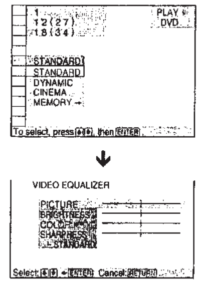

2
12(27)
18(34)
PLAY
DVD
VIDEO EQ
STANDARD
STANDARD
DYNAMIC
CINEMA
MEMORY →
To select, press ←↑↓→, then ENTER

■VIDEO EQ
Selects the setting of video control.
- STANDARD: displays a standard picture
- DYNAMIC: emphasizes the black level and so produces a bolder dynamic picture
- CINEMA: displays the picture with soft focus
- MEMORY➡: adjusts the picture items

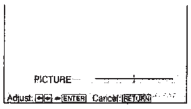
To adjust the picture items

You can adjust the following picture items individually.
- PICTURE
- BRIGHTNESS
- COLOR
- SHARPNESS

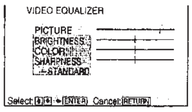
1 **Select "MEMORY➡" in "VIDEO EQ."**
The video control display appears.


1
12(27)
18(34)
PLAY
DVD
STANDARD
STANDARD
DYNAMIC
CINEMA
MEMORY →
To select, press ↑↓, then ENTER
VIDEO EQUALIZER
PICTURE
BRIGHTNESS
COLOR
SHARPNESS
STANDARD
Select: ↑↓ ENTER Cancel: RETURN

2 **Select the picture item you want to adjust using ↑/↓, then press ENTER.**
The adjustment bar of the selected item appears.
To cancel adjusting the picture halfway, press ↩RETURN.


PICTURE
Adjust: ←→ ENTER Cancel: RETURN

3 **Adjust the selected picture item using ←/→, then press ENTER.**
The setting is stored in memory.


VIDEO EQUALIZER
PICTURE
BRIGHTNESS
COLOR
SHARPNESS
STANDARD
Select: ↑↓ ENTER Cancel: RETURN

4 **To adjust other items, repeat Steps 2 and 3.**

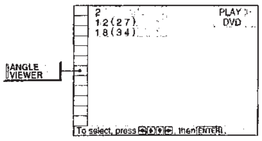
To exit the video control display
Press ↩RETURN.

To reset the picture items
Select "STANDARD" in "MEMORY➡."

Note
Only one setting of the picture items you adjusted in "MEMORY➡" can be stored. When you adjust the items, new setting erases the setting adjusted before.

Displaying Different Angles Simultaneously DVD

With DVDs on which various angles (multi-angles) for a scene are recorded, you can display all the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle directly. The angles are displayed on a screen divided in 9 sections.
Select "ANGLE VIEWER" after pressing DISPLAY twice.
When you can select "ANGLE VIEWER," the indicator of the "ANGLE VIEWER" lights in green.


2
12(27)
18(34)
PLAY
DVD
ANGLE VIEWER
To select, press ←↑↓→, then ENTER

To select the one angle
Select the angle using ←/↑/↓/→, then press ENTER.
The selected angle only is displayed.

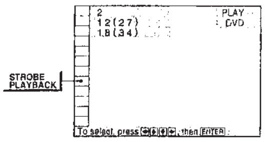
To cancel displaying multi-angles
Press ↩RETURN.

You can check the number on the front panel display
The number of the angle you select is displayed on the front panel display.

Notes
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.
- When a scene for which various angles (multi-angles) are not recorded comes while displaying different angles simultaneously, the player returns to the normal play.

Dividing a Track into 9 Sections (Strobe Play) DVD VIDEO CD

You can display 9 consecutive sections of the disc on the screen. In this case, the sections show still images.
Select "STROBE PLAYBACK" after pressing DISPLAY twice.


2
12(27)
18(34)
PLAY
DVD
STROBE PLAYBACK
To select, press ←↑↓→, then ENTER

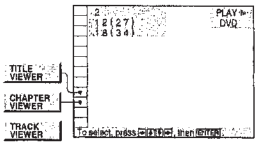
To cancel watching the strobe play
Press ↩RETURN.

During pause mode, 9 still images around the pause position are displayed
It is convenient to see the still images around the specific portion.

Note
Depending on the disc, there are some scenes you may not be able to watch with the strobe play.

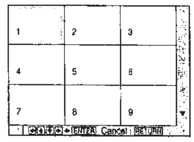
Scanning the Title, Chapter and Track DVD VIDEO CD

You can check the top picture of titles, chapters and tracks of the disc on a screen divided in 9 sections, and start playback from the chosen title, chapter or track.
Select "TITLE VIEWER"(DVD only), "CHAPTER VIEWER"(DVD only) or "TRACK VIEWER"(VIDEO CD only) after pressing DISPLAY twice.


2
12(27)
18(34)
PLAY
DVD
TITLE VIEWER
CHAPTER VIEWER
TRACK VIEWER
To select, press ←↑↓→, then ENTER

To start playback from the selected picture
Select the picture using ←/↑/↓/→, then press ENTER.
The playback starts from the selected picture.

When there are over 9 titles or chapters
▼ appears at the right bottom of the screen. Select the right bottom scene (the position of 9) and use ↓ to display next titles, tracks or chapters. To return to the previous scene, select the left top scene (the position of 1) and press ↑.


1
2
3
4
5
6
7
8
9
▼
←↑↓→ ENTER Cancel: RETURN

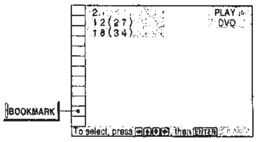
You can check the number on the front panel display
The number of the title, chapter and track you select is displayed on the front panel display.

To cancel scanning the title, chapter and track
Press ↩RETURN.

Notes
- Depending on the disc, you may not be able to scan the title, chapter and track.
- You cannot scan the track on a VIDEO CD during PBC playback.

Setting and Selecting Favorite Scene (Bookmark) DVD VIDEO CD

You can have the player store specific portions of the disc in memory and play them immediately whenever you want without the need to search (Bookmark). Up to 9 bookmarks per disc for up to 200 discs can be stored in memory.
Select "BOOKMARK" after pressing DISPLAY. When you play the disc which has bookmarks, the indicator of the "BOOKMARK" lights in green.


2
12(27)
18(34)
PLAY
DVD
BOOKMARK
To select, press ←↑↓→, then ENTER

To start playback from the selected picture
Select the picture using ←/↑/↓/→, then press ENTER.
The playback starts from the selected picture.

To cancel scanning the bookmark pictures
Press ↩RETURN.

To reset the bookmark
Select the point on which you want to reset the bookmark using ←/↑/↓/→, then press CLEAR.

To reset the all bookmarks of the player
Select "BOOKMARK RESET➡" under the "CUSTOM SETUP" in the setup display. For details on resetting all the bookmark of the player, see page 54.

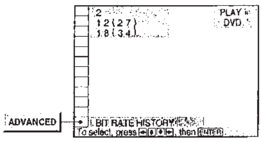
Setting the bookmark

During playback, when you find the scene to be bookmarked, press BOOKMARK on the remote.
The bookmark is set.

Notes
- The player can store in memory the bookmarks of up to 200 discs. When you have the player store over 200 discs in memory, each new bookmark erases the bookmark from those first stored.
- You may not set the bookmark depending on the discs.

Checking the Play Information DVD

You can check the play information on the bit rate, bit rate history or the portion where the disc is played (layer). While playing a disc, the approximate bit rate of the playback picture is always displayed by Mbps (Mega bit per second) and the audio by kbps (kilo bit per second). Select "ADVANCED" after pressing DISPLAY twice.



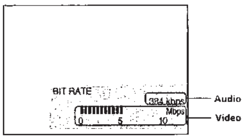
■ADVANCED

When playing a DVD

- BIT RATE: displays bit rate.
- BIT RATE HISTORY: displays bit rate and bit rate history.
- LAYER: displays layer and the point picked up.
- DISPLAY OFF: turns off ADVANCED display.

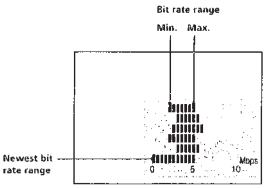
Displays of each Item

BIT RATE



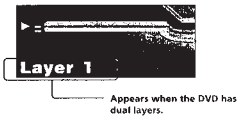
Bit rate refers to the amount of video/audio data per second in a disc. The higher the bit rate is, the larger the amount of data. When the bit rate level is high, there is a large amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

BIT RATE HISTORY



Indicates the transition of bit rate of the playback picture for a period up to the present.

LAYER



Indicates the approximate point where the disc is playing. If it is a dual-layer DVD, the player indicates which layer is being read.

For details on the layers, see page 70 (DVD).

Settings and Adjustments

This chapter describes how to set and how to adjust using the on-screen SET UP menu. Most settings and adjustments are required to be set when you first use the player.

This chapter also describes how to set the remote for controlling the TV, the AV receiver (amplifier) or the CD changer.

Using the Setup Display

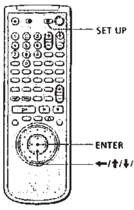
DVD VIDEO CD CD

Using the setup display, you can do the initial setup, adjusting the picture and sound quality, setting the various outputs, etc. You can also set a language for the subtitles and the setup display, limit playback by children, etc.

For details on each setup display item, see pages 52 to 60.

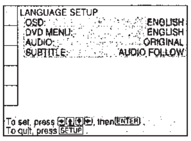
Note

You can display the setup display only when the player is in stop mode.



1 Press SET UP to display the setup display on the TV screen.

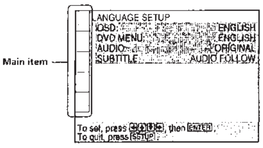
The setup displays of the models available in the U.S.A. and Canada are used for illustration purposes.



LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

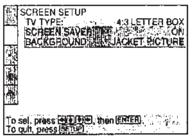
2 Select the main item you want using ↑/↓, and then press ENTER.

The selected main item is highlighted.



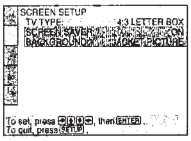
LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

↓



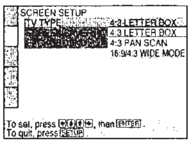
SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

3 Select the item you want using ↑/↓, then press → or ENTER.



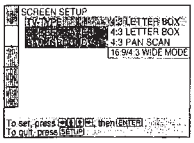
SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

↓



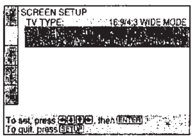
SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
4:3 LETTER BOX
4:3 PAN SCAN
16:9/4:3 WIDE MODE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

4 Select the setting you want using ←/↑/↓/→, then press ENTER.



SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
4:3 LETTER BOX
4:3 PAN SCAN
16:9/4:3 WIDE MODE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

↓



SCREEN SETUP
TV TYPE: 16:9/4:3 WIDE MODE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

To cancel using the setup display

Press SET UP on the remote.

Note

Some setup display items require operations other than selecting the setting. For details on these items, see the relevant pages.

Setup Display Item List

Default settings are underlined. (The languages in parentheses are for the models available in Latin America.)

LANGUAGE SETUP (page 52)
- OSD
  - ENGLISH (SPANISH)
  - FRENCH (PORTUGUESE)
  - SPANISH (ENGLISH)
  - PORTUGUESE (FRENCH)
- DVD MENU
  - ENGLISH (SPANISH)
  - FRENCH (PORTUGUESE)
  - SPANISH (ENGLISH)
  - PORTUGUESE (FRENCH)
  - GERMAN
  - ITALIAN
  - DUTCH
  - CHINESE
  - JAPANESE
  - DANISH
  - SWEDISH
  - FINNISH
  - NORWEGIAN
  - RUSSIAN
  - OTHERS →
- AUDIO
  - ORIGINAL
  - (same as DVD MENU)
- SUBTITLE
  - AUDIO FOLLOW
  - (same as DVD MENU)

SCREEN SETUP (page 53)
- TV TYPE
  - 4:3 LETTER BOX
  - 4:3 PAN SCAN
  - 16:9/4:3 WIDE MODE
- SCREEN SAVER
  - ON
  - OFF
- BACKGROUND
  - JACKET PICTURE
  - PICTURE MEMORY
  - GRAPHICS
  - BLUE
  - BLACK

CUSTOM SETUP (page 54)
- AUTO PLAY
  - OFF
  - TIMER
  - DEMO1
  - DEMO2
- DIMMER
  - BRIGHT
  - DARK
  - OFF
- PAUSE MODE
  - AUTO
  - FRAME
- BOOKMARK RESET →
- PARENTAL CONTROL →
- PLAYBACK MEMORY
  - ON
  - OFF

AUDIO SETUP (page 57)
- AUDIO ATT
  - OFF
  - ON
- AUDIO FILTER
  - SHARP
  - SLOW
- AUDIO DRC
  - STANDARD
  - TV MODE
  - WIDE RANGE
- TRACK SELECTION
  - OFF
  - AUTO
- DOWNMIX
  - DOLBY SURROUND
  - NORMAL
- DIGITAL OUT
  - ON
    - DOLBY DIGITAL
    - DTS
  - OFF

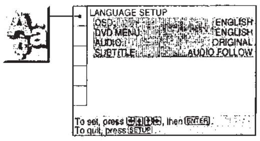
SPEAKER SETUP (page 59)
- SIZE
  - FRONT
  - CENTER
  - REAR
  - SUBWOOFER
- DISTANCE
  - FRONT
  - CENTER
  - REAR
- BALANCE
  - FRONT
  - REAR
- LEVEL
  - CENTER
  - REAR
  - SUBWOOFER
- TEST TONE
  - OFF
  - ON

Setting the Language for Display and Sound (LANGUAGE SETUP) DVD VIDEO CD CD

Select "LANGUAGE SETUP" after pressing SET UP.
"LANGUAGE SETUP" allows you to set various languages for on-screen display or sound.
Default settings are underlined.

Note

When you select a language that is not recorded on the DVD, one of the recorded languages is automatically selected except for the "OSD."


LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

■OSD (On-Screen Display)

Switches the language for the on-screen display. (The languages in parentheses are for the models available in Latin America.)

- ENGLISH (SPANISH)
- FRENCH (PORTUGUESE)
- SPANISH (ENGLISH)
- PORTUGUESE (FRENCH)

■DVD MENU

Switches the language for the DVD menu. (The languages in parentheses are for the models available in Latin America.)

- ENGLISH (SPANISH)
- FRENCH (PORTUGUESE)
- SPANISH (ENGLISH)
- PORTUGUESE (FRENCH)
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 72).
  After you have once selected, the language code (4 digits) is displayed.

■AUDIO

Switches the language for the sounds. (The languages in parentheses are for the models available in Latin America.)

- ORIGINAL: the language given priority in the disc
- ENGLISH (SPANISH)
- FRENCH (PORTUGUESE)
- SPANISH (ENGLISH)
- PORTUGUESE (FRENCH)
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 72).
  After you have once selected, the language code (4 digits) is displayed.

■SUBTITLE

Switches the language for the subtitles. (The languages in parentheses are for the models available in Latin America.)

- AUDIO FOLLOW*
- ENGLISH (SPANISH)
- FRENCH (PORTUGUESE)
- SPANISH (ENGLISH)
- PORTUGUESE (FRENCH)
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 72).
  After you have once selected, the language code (4 digits) is displayed.

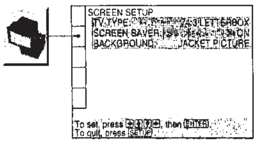
* When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language for the setting you selected in "AUDIO."

Note

The player gives priority to the settings of "SUBTITLE" and "AUDIO" in the Control Menu display when "PLAYBACK MEMORY" is set to "ON." The settings of "SUBTITLE" and "AUDIO" selected in the setup display may not appear in this case. For details on the Playback Memory function, see page 54.

Settings for Display (SCREEN SETUP) DVD VIDEO CD CD

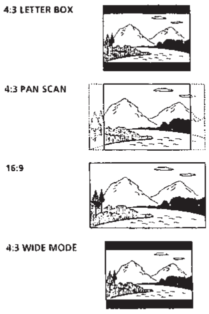
Select "SCREEN SETUP" after pressing SET UP.
"SCREEN SETUP" allows you to set the display according to the playback conditions.
Default settings are underlined.


SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

■TV TYPE

Selects the aspect ratio of the TV to be connected.

- 4:3 LETTER BOX: when you connect a normal TV to the player. Displays a wide picture with bands displayed on the upper and lower portions of the screen.
- 4:3 PAN SCAN: when you connect a normal TV to the player. Displays the wide picture on the whole screen with a portion automatically cut off.
- 16:9/4:3 WIDE MODE: when you connect a wide-screen TV to the player or when you connect a TV with WIDE MODE function to the player (displays a wide picture with bands displayed on the upper and lower portions of the screen).


4:3 LETTER BOX
4:3 PAN SCAN
16:9
4:3 WIDE MODE

Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" and vice versa.

■SCREEN SAVER

Turns on and off the screen saver. If you turn on the screen saver, the screen saver image appears when you leave the player or the remote in pause or stop mode for 15 minutes or when you play back a CD for more than 15 minutes. The screen saver is useful to prevent your display from becoming damaged.

- ON: turns on the screen saver.
- OFF: turns off the screen saver.

■BACKGROUND

Selects the background color or picture of the TV screen in stop mode or while playing a CD.

- JACKET PICTURE: The jacket picture appears in the background, but only when the jacket picture is already recorded on the disc.
- PICTURE MEMORY: Your favorite picture appears in the background when you have the player store in memory your favorite scene recorded on the disc for the background picture. For the way of storing in memory, see "Storing the picture in memory."
- GRAPHICS: The graphic picture stored in memory in the player beforehand appears in the background.
- BLUE: The background color is blue.
- BLACK: The background color is black.

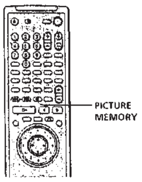
Note

If a disc which does not contain the jacket picture is played while "BACKGROUND" is set to "JACKET PICTURE," the graphic picture stored in the player will automatically appear in the background.

Storing the picture in memory

During playback, when you find the scene to be stored in memory, press PICTURE MEMORY on the remote.

The picture is stored in memory.

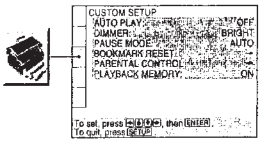

PICTURE MEMORY

Notes

- The player can store in memory only one scene. The stored picture appears in both the background and the startup screen.
- When the picture is stored in memory by pressing PICTURE MEMORY, the picture stored before is not retained in memory.

Custom Settings (CUSTOM SETUP) DVD VIDEO CD CD

Select "CUSTOM SETUP" after pressing SET UP.
"CUSTOM SETUP" allows you to set the playback conditions.
Default settings are underlined.


CUSTOM SETUP
AUTO PLAY: OFF
DIMMER: BRIGHT
PAUSE MODE: AUTO
BOOKMARK RESET: →
PARENTAL CONTROL: →
PLAYBACK MEMORY: ON
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

■AUTO PLAY

Selects the setting of Auto Play when you connect the AC power cord to the AC outlet.

- OFF: does not use "TIMER," "DEMO1" or "DEMO2" to start playing.
- TIMER: starts playing a disc automatically when you connect the AC power cord to the AC outlet. By connecting a timer (not supplied), you can start playing at any time you want.
- DEMO1: starts playing the demonstration 1 automatically.
- DEMO2: starts playing the demonstration 2 automatically.

■DIMMER

Adjusts the lighting of the front panel display.

- BRIGHT: makes the front panel display bright.
- DARK: makes the front panel display dark.
- OFF: turns off the lighting of the front panel display.

■PAUSE MODE (DVD only)

Selects the picture in pause mode.

- AUTO: A picture including subjects that move dynamically is output with no jitter. Normally select this position.
- FRAME: A picture including subjects that do not move dynamically is output with high resolution.

■BOOKMARK RESET→

Select "BOOKMARK RESET." The BOOKMARK reset display appears. And then press ENTER to reset all bookmarks.

■PARENTAL CONTROL→

Sets a password and playback limitation level when you play DVDs with playback limitation for children.
For details, see "Limiting Playback by Children (Parental Control)."

■PLAYBACK MEMORY

You can have the player store the settings of SUBTITLE and VIDEO EQ, etc., of each disc up to 200 discs (Playback Memory).
Set the Playback Memory function on or off.

- ON: stores the settings in memory when you eject the disc.
- OFF: does not store the settings in memory.

Following settings are stored in memory with the Playback Memory function.

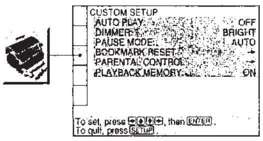
- AUDIO (page 33)
- SUBTITLE (page 34)
- ANGLE (page 35)
- VIRTUAL 3D SURROUND (page 42)
- DNR (page 44)
- VIDEO EQ (page 44)

Note

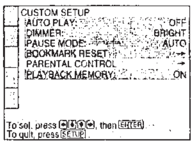
The player can store in memory the settings of up to 200 discs. When you have the player store over 200 discs in memory, each new setting erases the setting from those first stored.

Limiting Playback by Children (Parental Control) DVD

Select "CUSTOM SETUP" after pressing SET UP.
Playing some DVDs can be limited depending on the age of users. The "Parental Control" function allows you to set a playback limitation level.

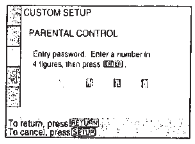

CUSTOM SETUP
AUTO PLAY: OFF
DIMMER: BRIGHT
PAUSE MODE: AUTO
BOOKMARK RESET: →
PARENTAL CONTROL: →
PLAYBACK MEMORY: ON
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

1 Select "PARENTAL CONTROL" using ↑/↓, then press ENTER.


CUSTOM SETUP
AUTO PLAY: OFF
DIMMER: BRIGHT
PAUSE MODE: AUTO
BOOKMARK RESET: →
PARENTAL CONTROL →
PLAYBACK MEMORY: ON
To set, press ←/↑/↓/→, then ENTER.
To quit, press SETUP.

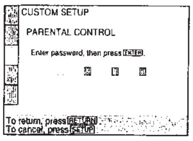
■When you have not entered a password yet

The display for entering a password appears.


CUSTOM SETUP
PARENTAL CONTROL
Entry password. Enter a number in 4 figures, then press ENTER.
To return, press RETURN.
To cancel, press SETUP.

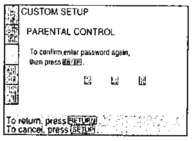
■When you have already entered a password

The display for confirming the password appears. Skip Step 2.


CUSTOM SETUP
PARENTAL CONTROL
Enter password, then press ENTER.
To return, press RETURN.
To cancel, press SETUP.

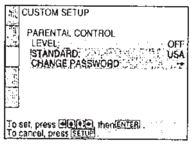
2 Enter a password in 4 digits using the number buttons, then press ENTER.

The digits change to asterisks (✻), and the display for confirming the password appears.

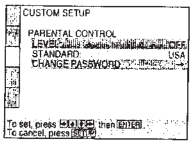

CUSTOM SETUP
PARENTAL CONTROL
To confirm, enter password again, then press ENTER.
To return, press RETURN.
To cancel, press SETUP.

3 To confirm your password, enter it using the number buttons, then press ENTER.

The display for setting the playback limitation level and changing the password appears.

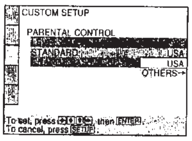

CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
STANDARD: USA
CHANGE PASSWORD →
To set, press ←/↑/↓/→, then ENTER.
To cancel, press SETUP.

4 Select "STANDARD" using ↑/↓, then press →.

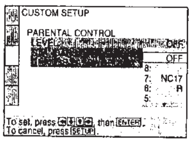

CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
STANDARD: USA
CHANGE PASSWORD →
To set, press ←/↑/↓/→, then ENTER.
To cancel, press SETUP.

5 Select an area as the standard for playback limitation level using ↑/↓, then press →.

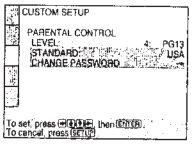
When you select "OTHERS→," select and enter the standard code in the table below using number buttons.


CUSTOM SETUP
PARENTAL CONTROL
STANDARD: USA
USA
OTHERS→
To set, press ←/↑/↓/→, then ENTER.
To cancel, press SETUP.

6 Select "LEVEL" using ↑/↓, then press →.


CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
OFF
8:
7: NC17
6: R
5:
To set, press ←/↑/↓/→, then ENTER.
To cancel, press SETUP.

7 Select the level you want using ↑/↓, then press ENTER.


CUSTOM SETUP
PARENTAL CONTROL
LEVEL: 4: PG13
STANDARD: USA
CHANGE PASSWORD →
To set, press ←/↑/↓/→, then ENTER.
To cancel, press SETUP.

The lower the value is, the more strict the limitation.

To return to the normal screen
Press SET UP.

To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 7, then press ▷.

To change the password
1 After Step 3, select "CHANGE PASSWORD" using ⬆/⬇, then press ➡ or ENTER.
The display for changing the password appears.
2 Follow Steps 2 and 3 to enter a new password.

💡You can turn off the Parental Control function just after inserting the DVD (Parental Control Temporarily Canceled)
When you set a playback limitation level and insert the DVD, the PARENTAL CONTROL display appears. Enter the password to turn off the Parental Control function.
When you stop playing the DVD, the level returns to the original level.

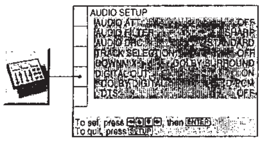
💡If you have forgot your password
Enter the 6 digits number "199703" in Step 2 to clear the current password. To enter a new password, follow the procedure from Step 2 again.

Notes
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- When you do not set a password, you cannot change the settings for playback limitation.
- Depending on the DVD, you may be asked to change the parental control level while playing the disc. In this case, enter the password, then change the level.
  When you stop playing the DVD, the level returns to the original level.

Standard	Code number
Austria	2046
Belgium	2057
Canada	2079
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
Hong Kong	2219
Indonesia	2238
Italy	2254
Japan	2276
Malaysia	2363
Netherlands	2376
Norway	2379
Philippines	2424
Russian	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Taiwan	2543
Thailand	2528
United Kingdom	2184

Settings for Sound (AUDIO SETUP)

Select "AUDIO SETUP" after pressing SET UP.
"AUDIO SETUP" allows you to set the sound according to the playback conditions.
Default settings are underlined.



AUDIO SETUP
AUDIO ATT: OFF
AUDIO FILTER: SHARP
AUDIO DRC: STANDARD
TRACK SELECTION: OFF
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF
To set, press ⬅⬆⬇➡, then ENTER.
To quit, press SETUP.

■AUDIO ATT (attenuation)
Selects the setting of the output from the LINE OUT (AUDIO 1, 2) and 5.1CH OUTPUT connectors according to the audio equipment to be connected.
- OFF: turns off the audio attenuation.
- ON: reduces the audio output level so that no sound distortion occurs.

Note
The setting does not affect the output from the DIGITAL OUT OPTICAL and COAXIAL connectors.

■AUDIO FILTER
Selects the type of digital filter to reduce the noise of a frequency higher than 22.05kHz (fs 44.1kHz), 24kHz (fs 48kHz) or 48kHz (fs 96kHz).
- SHARP: makes the sound clear and provides smooth sound reproduction. Normally set this position.
- SLOW: makes the sound warm and deep.

Note
Depending on the disc, the effect on the sound may be difficult to hear.

■AUDIO DRC (Dynamic Range Control)
Makes the sound clear with the volume turned down at night, etc., when you play a DVD. This affects the output from the DIGITAL OUT connectors only when "PCM" in "DIGITAL OUT" is set to "ON," and it affects the output from the LINE OUT (AUDIO 1,2), and 5.1CH OUTPUT connectors.
- STANDARD: Normally select this position.
- TV MODE: makes the low sound clear even if you turned the volume down, so it is good for playing at night. It is especially recommended when you listen to the sound using the speakers of the TV.
- WIDE RANGE: It gives you the feeling of being at a live performance. When you use high quality speakers, it is more effective.

Notes
- When you play DVDs without the AUDIO DRC function, there may be no effect on the sound.
- When this item is set to "WIDE RANGE," the sound volume from other than the 5.1CH OUTPUT connectors may be less than usual.
- "WIDE RANGE" cannot be selected when you have selected "NONE" in "SIZE" under "SPEAKER SETUP."

■TRACK SELECTION
Gives the sound track which contains the highest number of the channels priority when you play a DVD on which multiple audio formats are recorded. If multiple audio channels are recorded in PCM, DTS or Dolby Digital format, the higher-numbered channel audio recorded in PCM, DTS or Dolby Digital format is played.
- OFF : No priority given.
- AUTO : Priority given.

Notes
- When the player stores the settings in memory with the Playback Memory function, the player may not give priority even if you select "AUTO."
- When you set this item to "AUTO," the language may change depending on the "AUDIO" settings in "LANGUAGE SETUP." The "TRACK SELECTION" setting has higher priority than that of "AUDIO" settings in "LANGUAGE SETUP" (page 52).
- If you set "DTS" in "AUDIO SETUP" to "OFF," the DTS sound track is not played even if you set this item to "AUTO" and the highest-numbered channel audio is recorded in DTS format.
- If PCM, DTS and Dolby Digital sound tracks have the same number of the highest channels, the player selects PCM, DTS and Dolby Digital sound tracks, in this order.
- Depending on the DVD, the audio with priority may be predetermined. In this case, you cannot give priority to the DTS or Dolby Digital format by selecting "AUTO."

■DOWNMIX*
Switches the mixing down methods when you play a DVD on which the sound in Dolby Digital format is recorded.
- DOLBY SURROUND: when the player is connected to an audio component that conforms to Dolby Surround. (Pro Logic)
- NORMAL: when the player is connected to a normal audio component.

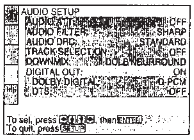
* The setting affects the following connectors:
–LINE OUT (AUDIO 1, 2) connectors
–DIGITAL OUT (OPTICAL, COAXIAL) connectors.

■DIGITAL OUT
Selects output signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- ON: Normally select this position. When you select "ON," set "DOLBY DIGITAL" and "DTS." For details on setting them, see "Setting for the Signal to the Digital Output."
- OFF: when the player does not output the sound signals via DIGITAL OUT OPTICAL and COAXIAL connectors, if you select this position, the influence of the digital circuit upon the analog one is minimum.

Notes
- When you play the sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency). When the signals are output from LINE OUT (AUDIO 1, 2) connector, sampling frequency stays at 96 kHz and the output signals are converting to analog signals.
- When you select "OFF," You cannot set "DOLBY DIGITAL" and "DTS."

Setting for the Signal to the Digital Output

When you select "ON," set "DOLBY DIGITAL" and "DTS."
Switches the methods of outputting audio signals when you connect a digital component such as a receiver (amplifier) having a digital connector, an audio component having a built-in DTS decoder, a DAT or MD via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord. For details on the connection, see page 11.



AUDIO SETUP
AUDIO ATT: OFF
AUDIO FILTER: SHARP
AUDIO DRC: STANDARD
TRACK SELECTION: OFF
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF
To set, press ⬅⬆⬇➡, then ENTER.
To quit, press SETUP.

■DOLBY DIGITAL
Selects output Dolby Digital signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."
- D-PCM (Downmix PCM): when you play the Dolby Digital sound tracks, the output audio signals are mixed down to 2 channels. With the settings of the item "DOWNMIX" in "AUDIO SETUP," you can select whether the signals conform to Dolby Surround (Pro Logic) or not.
- DOLBY DIGITAL: when the player is connected to an audio component with a built-in Dolby Digital decoder.

> **Note**
> If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set "DOLBY DIGITAL" in "AUDIO SETUP" to "DOLBY DIGITAL." Otherwise, when you play the Dolby Digital sound track, a loud noise or no sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■DTS
Selects output DTS signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."
- OFF: when the player is connected to an audio component lacking a built-in DTS decoder.
- ON: when the player is connected to an audio component having a built-in DTS decoder.

Note
Select the setting correctly. Otherwise, no sound or strange sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

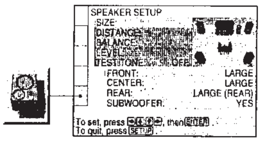
> - **Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. You cannot hear the DTS sound unless you connect the player to an audio component having a built-in DTS decoder.**
> - **When you play the DTS sound track on a CD, a loud noise may come out from the LINE OUT (AUDIO 1, 2), 5.1CH OUTPUT and PHONES connectors, affecting your ears or causing the speakers or headphones to be damaged.**
> - **When you play the DTS sound track on a DVD, no sounds will come out from the LINE OUT (AUDIO 1, 2), 5.1CH OUTPUT and PHONES connectors.**

Notes on playing the DTS sound tracks on a CD
- Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. The player output the DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors even if "DTS" in "AUDIO SETUP" is set to "OFF" in the setup display, affecting your ears or causing the speakers to be damaged.
- The DTS indicator on the front panel does not light up even if the player outputs DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- Set the sounds to "STEREO" when you play the DTS sound tracks on a CD. (See "Changing the Sounds" on page 33.) If you set the sounds to "1/L" or "2/R", no sounds will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors.

Notes on playing the DTS sound tracks on a DVD
- No sounds will come out from the LINE OUT (AUDIO 1, 2) and PHONES connectors.
- If the player is connected to an audio component lacking a built-in DTS decoder, do not set "DTS" in "DIGITAL OUT" to "ON" in the setup display. Otherwise, when you play the DTS sound track, a loud noise will come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you set "DTS" in "AUDIO SETUP" to "OFF," no sound will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors even if you play DTS sound tracks on DVDs.

Speaker Set Up

Select "SPEAKER SETUP" after pressing SET UP.
To obtain the best possible surround sound, first specify the size of the speakers you have connected and their distance from your listening position, then set the balance and level. Use the test tone to adjust the speaker volumes to the same level.
For the speaker hook ups, see pages 12 to 13.



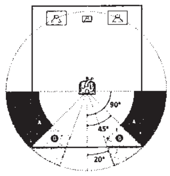
SPEAKER SETUP
SIZE
DISTANCE
BALANCE
LEVEL
TEST TONE: OFF
FRONT: LARGE
CENTER: LARGE
REAR: LARGE (REAR)
SUBWOOFER: YES
To set, press ⬅⬆⬇➡, then ENTER.
To quit, press SETUP.

■SIZE
Selects the size of the speakers to be connected.
- FRONT
  - — LARGE: Normally select this.
  - — SMALL: When the sound cracks or the effects of the surround is difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from subwoofers.
- CENTER
  - — NONE: If you will not connect a center speaker, select this.
  - — LARGE: Normally select this.
  - — SMALL: When the sound cracks, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from some other speakers .
- REAR
  - — NONE: If you will not connect a rear speaker, select this.
  - — LARGE (REAR*/SIDE*): Normally select this.
  - — SMALL (REAR*/SIDE*): When the sound cracks or the effects of the surround is difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from some other speakers .
- SUBWOOFER
  - — NONE: If you do not connect a subwoofer, select this. This activates the Dolby Digital bass redirection circuitry and outputs the LFE signals from the front speakers.
  - — YES: If you connect a subwoofer, select this to output the LFE (low frequency effects) channel from the subwoofer.

* Rear speaker position (REAR/SIDE)
These items let you specify the location of your rear speakers for proper implementation of "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" in the Control Menu display. Refer to the illustration below.

- Set to "SIDE" if the location of your rear speakers corresponds to section A.
- Set to "REAR" if the location of your rear speakers correcponds to section B.

This setting effects only the "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" mode.



Notes

- When you select an item, the sound cuts off for a moment.
- The cut off frequency for the subwoofer is fixed at 100Hz.
- Set the subwoofer's cut off frequency as high as possible.
- Depending on the settings of other speakers, the subwoofer may output excessive sound.
- If your speakers are too small to reproduce low bass frequencies, set all speaker settings to "SMALL" and utilize a subwoofer for low frequency sound.

■DISTANCE

You can vary the distance of each speaker as follows. Default adjustments are in the parentheses.

- FRONT (12ft/3.6m)
  Front speaker distance can be set in 1 foot/0.3 meter steps from 4 to 50 feet/1.2 to 15.2 meters.
- CENTER (12ft/3.6m)
  Center speaker distance can be set in 1 foot/0.3 meter steps from a distance 2 feet/0.6 meter farther to the front speaker to a distance 5 feet/1.6 meters closer to your listening position.
- REAR (10ft/3.0m)
  Rear speaker distance can be set in 1 foot/0.3 meter steps from a distance equal to the front speaker distance to a distance 16 feet/5 meters closer to your listening position.

Notes

- When you set the distance, the sound cuts off for a moment.
- If each of the front or rear speakers are not placed an equal distance from your listening position, set the distance of the closest speaker.
- Do not place the rear speaker farther away from your listening position than the front speakers.

■BALANCE

You can vary the balance of each speaker as follows. Default adjustments are in the parentheses.

- FRONT (0dB)
  Adjust the balance between the front left and right speakers (-6dB [L] to +6dB [R], 0.5dB steps).
- REAR (0dB)
  Adjust the balance between the rear left and right speakers (-6dB [L] to +6dB [R], 0.5dB steps).

Note

When you select "VES A" or "VES B" in "VIRTUAL 3D SURROUND" in the Control Menu display, you cannot adjust the level or the balance of the speakers except for the front speakers.

■LEVEL

You can vary the level of each speaker as follows. Default adjustments are in the parentheses.

- CENTER (0dB)
  Adjust the level of the center speaker (-6dB to +6dB, 0.5dB steps).
- REAR (0dB)
  Adjust the level of the rear speakers (-6dB to +6dB, 0.5dB steps).
- SUBWOOFER (0dB)
  Adjust the level of the subwoofer (-10dB to +6dB, 0.5dB steps).

■TEST TONE

You can hear the test tone from each speaker in sequence.

- OFF: The test tone is not emitted from speakers.
- ON: During adjustment of "BALANCE" or "LEVEL," the test tone is emitted from both speakers simultaneously.

Note

While you are playing a disc, you cannot hear the test tone. Execute the test tone after you stop playback.

To adjust the volume of all the speakers at one time

Use the receiver's (amplifier's) volume control.

To return to the default setting

Select the item, then press CLEAR.

Adjusting the speaker volume

1 **While you stop playback, select "SPEAKER SETUP" after pressing SET UP.**

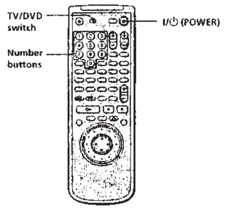
2 **Select "TEST TONE" and set "TEST TONE" to "ON."**
You will hear the test tone from each speaker in sequence.

3 **From your listening position, select "BALANCE" or "LEVEL" and adjust the value of "BALANCE" and "LEVEL" using ↑/↓.**
During this adjustment, the test tone is emitted from both speakers simultaneously.

4 **Select "TEST TONE" and set "TEST TONE" to "OFF" to turn off the test tone.**

Controlling the TV or the AV Receiver (Amplifier) with the Supplied Remote

If you adjust the remote signal, you can control your TV with the supplied remote. Default setting is to control Sony TVs with the ▣ mark.
When you connect the player to a Sony AV receiver (amplifier), you can also set the input of the receiver (amplifier) to this player with the supplied remote.



Controlling TVs with the remote

1 **Slide TV/DVD switch to TV.**

2 **Hold down I/⏻ (POWER), and enter your TV's manufacturer's code (see the table on the next page) using the number buttons. Then release I/⏻ (POWER).**

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

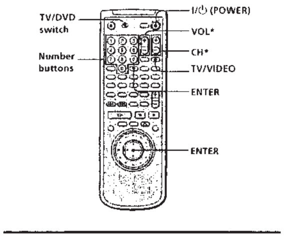
Notes

- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number may reset to 01 (Sony). Reset the appropriate code number.

Manufacturer	Code number
Sony (default)	01
Akai	04
AOC	04
Centurion	12
Coronado	03
Curis-Mathes	12
Daytron	12
Emerson	03,04,14
Fisher	11
General Electric	06,10
Gold Star	03,04,17
Hitachi	02,03
J.C.Penny	04,12
JVC	09
KMC	03
Magnavox	03,08,12
Marantz	04,13
MGA/Mitsubishi	04,12,13,17
NEC	04,12

Manufacturer	Code number
Panasonic	06,19
Philco	03,04
Philips	08
Pioneer	16
Portland	03
Quasar	06,18
Radio Shack	05,14
RCA	04,10
Sampo	12
Sanyo	11
Scott	12
Sears	07,10,11
Sharp	03,05,18
Sylvania	08,12
Teknika	03,08,14
Toshiba	07
Wards	03,04,12
Yorx	12
Zenith	15

When you set the TV/DVD switch to TV, you can control your TV using the keys below.



By pressing	You can
I/⏻ (POWER)	Turn the TV on or off
TV/VIDEO	Select the input source for the TV
VOL*	Adjust the volume of the TV
CH*	Change the channel of the TV
Number buttons and ENTER	Select the channel of the TV

* You can control the TV regardless of the position of the TV/DVD switch.

Note

Depending on the TV, you may not be able to control your TV or to use some of the buttons above.

Controlling an AV receiver (amplifier) with the remote

1 **Slide TV/DVD switch to DVD.**

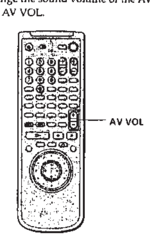
2 **Hold down I/⏻ (POWER), and enter your AV receiver's manufacturer's code (see the table below) using the number buttons. Then release I/⏻ (POWER).**

Manufacturer	Code number
Sony	91(default), 88, 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Code numbers of controllable receivers (amplifiers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your receiver (amplifier).

You can also change the sound volume of the AV receiver (amplifier) using AV VOL.



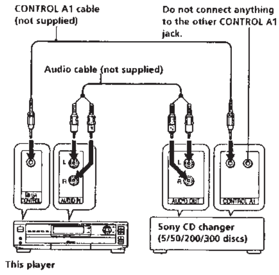
Notes

- Depending on the AV receiver (amplifier), you may not be able to control your AV receiver (amplifier).
- You can control the AV receiver (amplifier) regardless of the position of the TV/DVD switch.

Controlling the CD Changer (Mega Control)

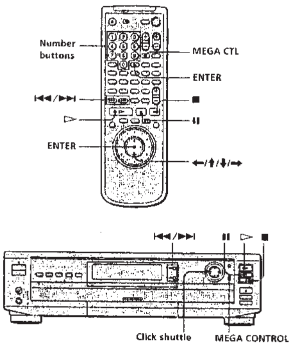
You can control a Sony CD changer of 5/50/200/300 discs connected to the MEGA CONTROL jack of the player.

Connecting the CD changer


CONTROL A1 cable (not supplied)
Do not connect anything to the other CONTROL A1 jack.
Audio cable (not supplied)
L
R
MEGA CONTROL
AUDIO IN
L
R
AUDIO OUT
CONTROL A1
Sony CD changer (5/50/200/300 discs)
This player

Controlling the CD changer

The controls indicated below are effective while the MEGA CONTROL button is lit.



1 **Set the command mode selector of the CD changer to "CD 3."**

2 **Turn on the player and the CD changer.**

3 **Press MEGA CONTROL on the player or press MEGA CTL on the remote.**
The MEGA CONTROL button of the front panel lights up and the display shows the current disc number of the CD changer.

4 **Select the play mode you want on the CD changer.**

5 **Press ▷ on the player to start playing.**
The playback starts and the display shows the current disc and track numbers and the playing time of the track.
While the MEGA CONTROL button of the front panel is lit, you can control the CD changer with the controls on the player as follows:

To	Operation
Select a disc in continuous play mode	Press the number button on the remote and ENTER, or ↑/↓ and ENTER, or turn the click shuttle of the player slowly.
Skip by 10 discs in continuous play mode	Press ←/→.
Stop	Press ■.
Pause	Press II.
Resume play after pause	Press II or ▷.
Go to the next track	Press ▶▶I.
Go back to the preceding track	Press I◀◀.

To control the player again
Press MEGA CONTROL on the player or press MEGA CTL on the remote.
The MEGA CONTROL button goes off and you can control the player.

Notes
- Connect only a Sony CD changer of 5/50/200/300 discs to the MEGA CONTROL jack.
- You cannot locate a particular point in a track of the CD changer using the controls on the player.
- Depending on the CD changer, some controls on the player may not operate the CD changer as they do the player.
- You cannot control the player when the MEGA CONTROL button on the front is lit.
- The player will not enter Resume Play after the MEGA CONTROL button on the front has been turned on and off.
- You cannot control the CD changer right after turning on the player or connecting the CD changer. Wait a few seconds until the player recognizes the CDs.
- When the MEGA CONTROL button is lit, the on-screen display of the player does not appear.

Self-diagnosis function

When the self-diagnosis function works to prevent the player from malfunctioning, a five-character service number (combination of a letter and digits) flashes on the front panel display. In this case, check the following table.

First three characters	Cause and/or Corrective Action
C 13	• The disc is dirty. ➡Clean the disc with a cleaning cloth (page 6).
C 31	• The disc is not inserted correctly. ➡Open the disc tray and insert the disc correctly.
E xx (xx is any number)	• To prevent the player from malfunctioning, the self-diagnosis function has worked. ➡When you contact your Sony dealer or local authorized Sony service facility, give the 5-character service number. (example: E 61 10)

Language Code List

For details, see pages 34 and 52.

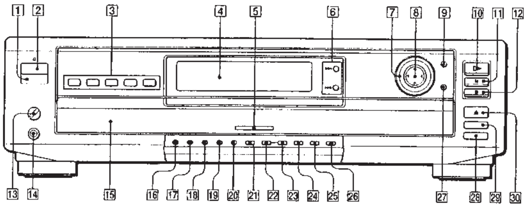
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1186	Scots Gaelic	1350	Malayalam	1513	Siswati
1028	Abkhazian	1194	Galician	1352	Mongolian	1514	Sesotho
1032	Afrikaans	1196	Guarani	1353	Moldavian	1515	Sundanese
1039	Amharic	1203	Gujarati	1356	Marathi	1516	Swedish
1044	Arabic	1209	Hausa	1357	Malay	1517	Swahili
1045	Assamese	1217	Hindi	1358	Maltese	1521	Tamil
1051	Aymara	1226	Croatian	1363	Burmese	1525	Telugu
1052	Azerbaijani	1229	Hungarian	1365	Nauru	1527	Tajik
1053	Bashkir	1233	Armenian	1369	Nepali	1528	Thai
1057	Byelorussian	1235	Interlingua	1376	Dutch	1529	Tigrinya
1059	Bulgarian	1239	Interlingue	1379	Norwegian	1531	Turkmen
1060	Bihari	1245	Inupiak	1393	Occitan	1532	Tagalog
1061	Bislama	1248	Indonesian	1403	(Afan) Oromo	1534	Setswana
1066	Bengali; Bangla	1253	Icelandic	1408	Oriya	1535	Tonga
1067	Tibetan	1254	Italian	1417	Punjabi	1538	Turkish
1070	Breton	1257	Hebrew	1428	Polish	1539	Tsonga
1079	Catalan	1261	Japanese	1435	Pashto; Pushto	1540	Tatar
1093	Corsican	1269	Yiddish	1436	Portuguese	1543	Twi
1097	Czech	1283	Javanese	1463	Quechua	1557	Ukrainian
1103	Welsh	1287	Georgian	1481	Rhaeto-Romance	1564	Urdu
1105	Danish	1297	Kazakh	1482	Kirundi	1572	Uzbek
1109	German	1298	Greenlandic	1483	Romanian	1581	Vietnamese
1130	Bhutani	1299	Cambodian	1489	Russian	1587	Volapük
1142	Greek	1300	Kannada	1491	Kinyarwanda	1613	Wolof
1144	English	1301	Korean	1495	Sanskrit	1632	Xhosa
1145	Esperanto	1305	Kashmiri	1498	Sindhi	1665	Yoruba
1149	Spanish	1307	Kurdish	1501	Sangho	1684	Chinese
1150	Estonian	1311	Kirghiz	1502	Serbo-Croatian	1697	Zulu
1151	Basque	1313	Latin	1503	Singhalese	1703	Not specified
1157	Persian	1326	Lingala	1505	Slovak		
1165	Finnish	1327	Laothian	1506	Slovenian		
1166	Fiji	1332	Lithuanian	1507	Samoan		
1171	Faroese	1334	Latvian; Lettish	1508	Shona		
1174	French	1345	Malagasy	1509	Somali		
1181	Frisian	1347	Maori	1511	Albanian		
1183	Irish	1349	Macedonian	1512	Serbian		

Index to Parts and Controls

Refer to the pages indicated in parentheses for details.

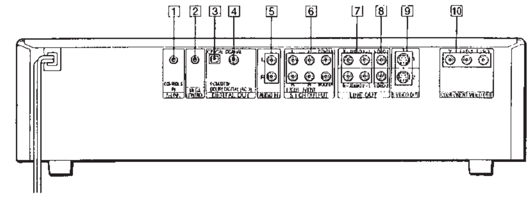
Front Panel



1 **(remote sensor) (7)**
Accepts the remote control signals.
2 **I/⏻ (POWER) button and indicator (15)**
Turns on and off the power of the player.
3 **DISC SELECT 1 – 5 buttons (16)**
Selects a disc.
4 **Front Panel Display (22)**
Indicates the playing time, etc.
5 **DOLBY DIGITAL indicator**
Lights up when:
- playing back Dolby Digital soundtrack on the DVD
- the disc is not inserted

6 **I◀◀/▶▶I PREV/NEXT buttons (16)**
Press to go to the next chapter or track or to go back to the previous chapter or track.
7 **Click shuttle (17)**
Changes the playback speed.
8 **←/↑/↓/→/ ENTER button**
Selects and executes the items or settings.
9 **JOG button/indicator (17)**
Press to play a disc frame by frame.
10 **▷PLAY button (15)**
Plays a disc.
11 **IIPAUSE button (16)**
Pauses playing a disc.
12 **■STOP button (16, 18)**
Stops playing a disc.
13 **PHONES LEVEL control (15)**
Adjusts the headphone volume.
14 **PHONES connector (15)**
Connects the headphones to this connector.
15 **Disc tray (15)**
Place discs on the tray.
16 **1/ALL DISCS button (36)**
Selects 1 DISC or ALL DISCS play mode.
17 **SHUFFLE button (39)**
Displays the "SHUFFLE" display on the TV screen.
18 **PGM (program) button (38)**
Displays the "PROGRAM" display on the TV screen.
19 **REPEAT button (40)**
Displays the "REPEAT" display on the TV screen.
20 **CLEAR button (37, 38, 39, 41)**
Press to return to the continuous play, etc.
21 **LOAD button (23)**
Reads the information of the discs loaded in sequence.
22 **INPUT button (32)**
Press when labeling a disc.
23 **TIME/TEXT button (22)**
Displays the playing time of the disc, etc., on the front panel display.
24 **TITLE button (19)**
Displays the title menu on the TV screen.
25 **DVD MENU button (19)**
Displays the DVD menu on the TV screen.
26 **↩ RETURN button (20, 24, 26)**
Press to return to the previously selected screen, etc.
27 **MEGA CONTROL button/indicator (64)**
Press to control the connected CD changer.
28 **EX-CHANGE button (21)**
Press to change discs during playback.
29 **DISC SKIP button (15, 21)**
Press to turn the disc tray to place other discs.
30 **⏏OPEN/CLOSE button (15)**
Opens or closes the disc tray.

Rear Panel



1 **S-LINK connector (8)**
Connects to the S-link connector on an external component.

2 **MEGA CONTROL connector (63)**
Connects to the control connector on a Sony CD changer of 5/50/200/300 discs.

3 **DIGITAL OUT (OPTICAL) connector (11)**
Connects to an audio component using the optical digital connecting cord.

4 **DIGITAL OUT (COAXIAL) connector (11)**
Connects to an audio component using the coaxial digital connecting cord.

5 **AUDIO IN (L, R) connectors (63)**
Connects to the audio output on a Sony CD changer of 5/50/200/300 discs.

6 **5.1CH OUTPUT connectors (13)**
Connects to a receiver (amplifier) having 5.1 channel input connectors.

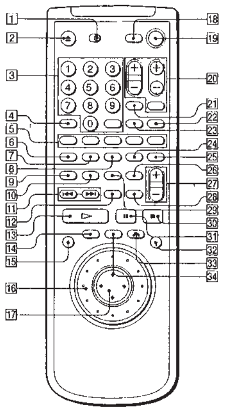
7 **LINE OUT (AUDIO 1, 2) connectors (8, 10)**
Connects to the audio input connector on the TV or receiver (amplifier).

8 **LINE OUT (VIDEO 1, 2) connectors (8)**
Connects to the video input connector on the TV or monitor.

9 **S VIDEO OUT (1, 2) connectors (8, 10)**
Connects to the S video input connector on the TV or monitor.

10 **COMPONENT VIDEO OUT connectors (9)**
Connects to a monitor or projector having component video input connectors (Y, PB/B-Y, PR/R-Y) that conform to the output signals from the player.

Remote



1 **TV/DVD switch (62)**
Selects to control the player or the TV with the remote.

2 **≜OPEN/CLOSE button (15)**
Opens or closes the disc tray.

3 **Number buttons/ENTER button**
Selects and executes the items or settings.

4 **CLEAR button (37, 38, 39, 41)**
Press to return to the continuous play, etc.

5 **DISC 1 – 5 buttons (16)**
Selects a disc.

6 **SHUFFLE button (39)**
Displays the "SHUFFLE" display on the TV screen.

7 **PROGRAM button (38)**
Displays the "PROGRAM" display on the TV screen.

8 **REPEAT button (40)**
Displays the "REPEAT" display on the TV screen.

9 **AUDIO button (33)**
Changes the sound while playing a DVD or VIDEO CD.

10 **ANGLE button (35)**
Changes the angles when playing a DVD.

11 **⏮/⏭PREV/NEXT buttons (16)**
Press to go to the next chapter or track or to go back to the previous chapter or track.

12 **PICTURE MEMORY button (53)**
Press to store a picture in memory.

13 **▷PLAY button (15)**
Plays a disc.

14 **TITLE button (19)**
Displays the title menu on the TV screen.

15 **DISPLAY button (25)**
Displays the Control Menu display on the TV screen to set or adjust the items.

16 **Click shuttle (17)**
Changes the playback speed.

17 **←/↑/↓/→/ ENTER button**
Selects and executes the items or settings.

18 **SET UP button (49)**
Displays the setup display on the TV screen to set or adjust the items.

19 **I/⏻ (POWER) button (15)**
Turns on and off the power of the player and TV.

20 **TV operation buttons (62)**
Controls TVs.

21 **MEGA CTL (control) button (64)**
Press to control the connected CD changer.

22 **TIME/TEXT button (22)**
Displays the playing time of the disc, etc., on the front panel display.

23 **INPUT button (32)**
Press when labeling a disc.

24 **1/ALL DISCS button (36)**
Selects 1 DISC or ALL DISCS play mode.

25 **DISC EXPLORER button (24)**
Displays the disc information such as jacket picture and disc memo.

26 **LOAD button (23)**
Reads the information of the discs loaded in sequence.

27 **AV VOL (volume) buttons (63)**
Controls the volume of AV receivers (amplifiers).

28 **BOOKMARK button (47)**
Press to set a bookmark.

29 **SUBTITLE button (34)**
Displays the SUBTITLE menu in the Control Menu display.

30 **■STOP button (16, 18)**
Stops playing a disc.

31 **❚❚PAUSE button (16)**
Pauses playing a disc.

32 **JOG button/indicator (17)**
Press to play a disc frame by frame.

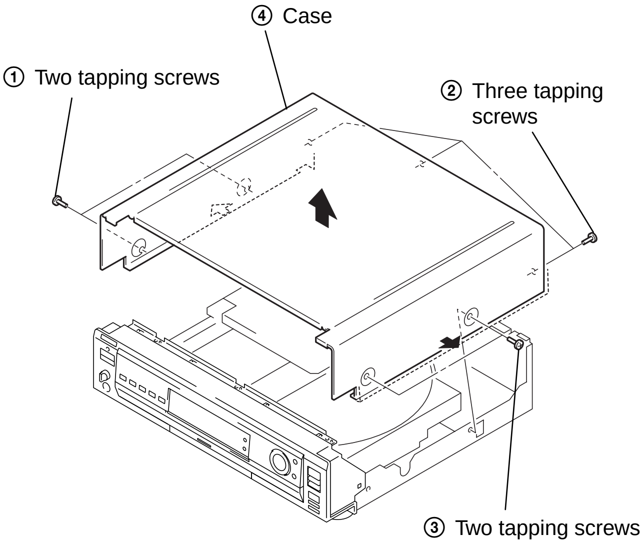
33 **↩RETURN button (20, 24, 26)**
Press to return to the previously selected screen, etc.

34 **DVD MENU button (19)**
Displays the DVD menu on the TV screen.

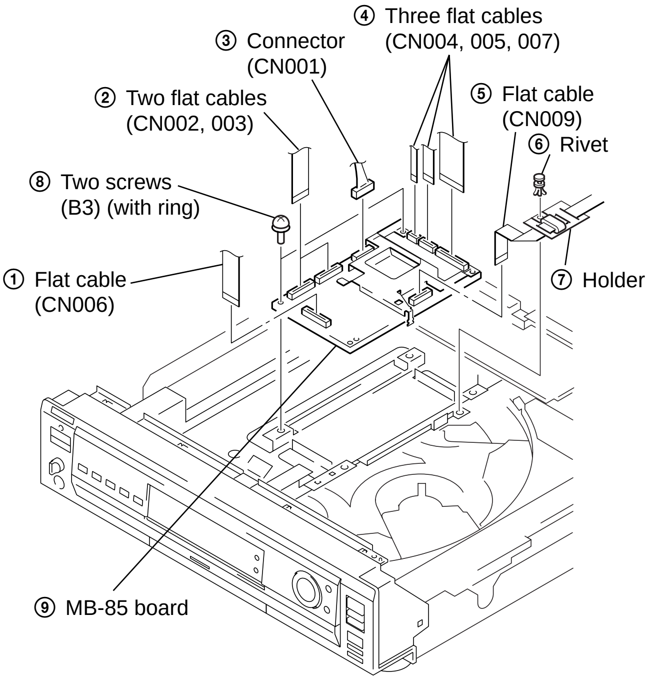
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

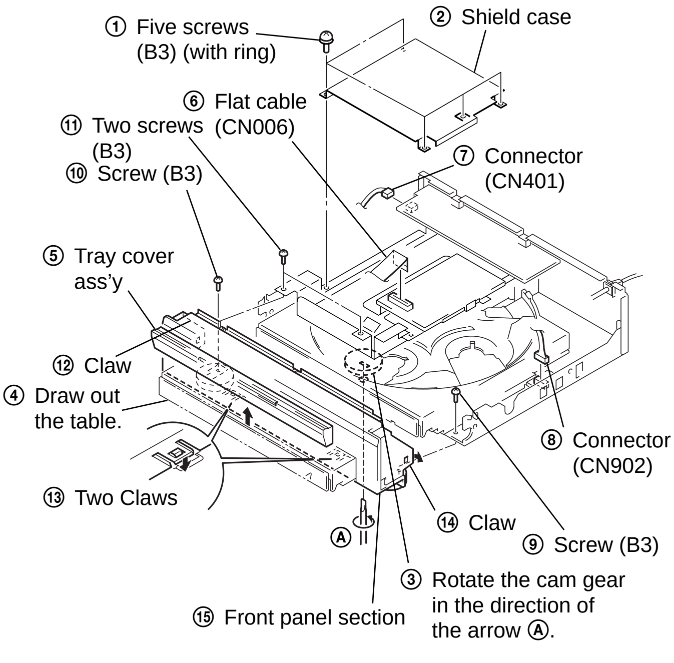
2-1. CASE REMOVAL


④ Case
① Two tapping screws
② Three tapping screws
③ Two tapping screws

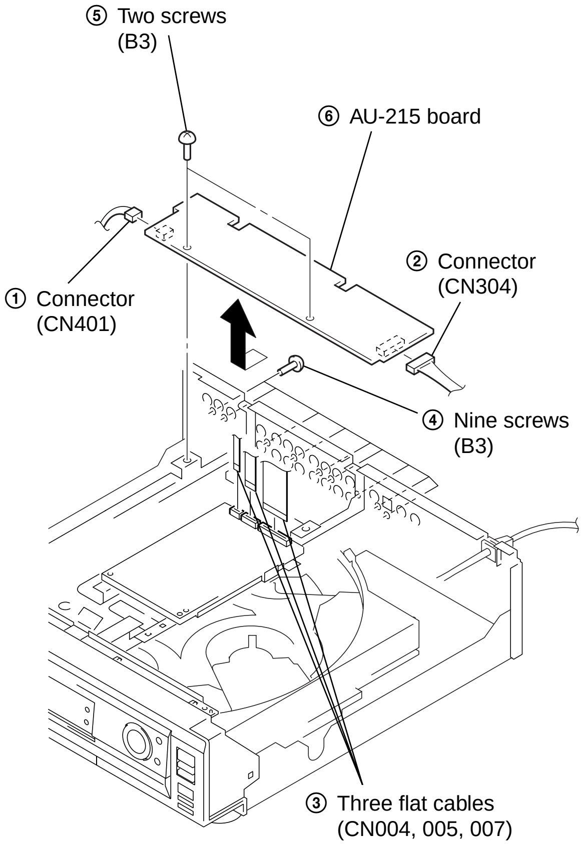
2-3. MB-85 BOARD REMOVAL


④ Three flat cables (CN004, 005, 007)
③ Connector (CN001)
② Two flat cables (CN002, 003)
⑤ Flat cable (CN009)
⑥ Rivet
⑧ Two screws (B3) (with ring)
① Flat cable (CN006)
⑦ Holder
⑨ MB-85 board

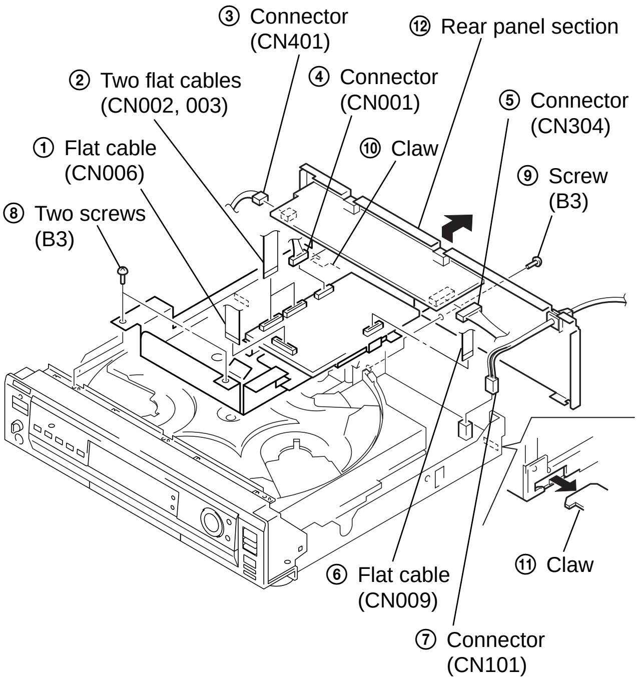
2-2. FRONT PANEL SECTION REMOVAL


① Five screws (B3) (with ring)
② Shield case
⑥ Flat cable (CN006)
⑪ Two screws (B3)
⑩ Screw (B3)
⑦ Connector (CN401)
⑤ Tray cover ass'y
⑫ Claw
④ Draw out the table.
⑧ Connector (CN902)
⑬ Two Claws
⑭ Claw
Ⓐ
⑨ Screw (B3)
③ Rotate the cam gear in the direction of the arrow Ⓐ.
⑮ Front panel section

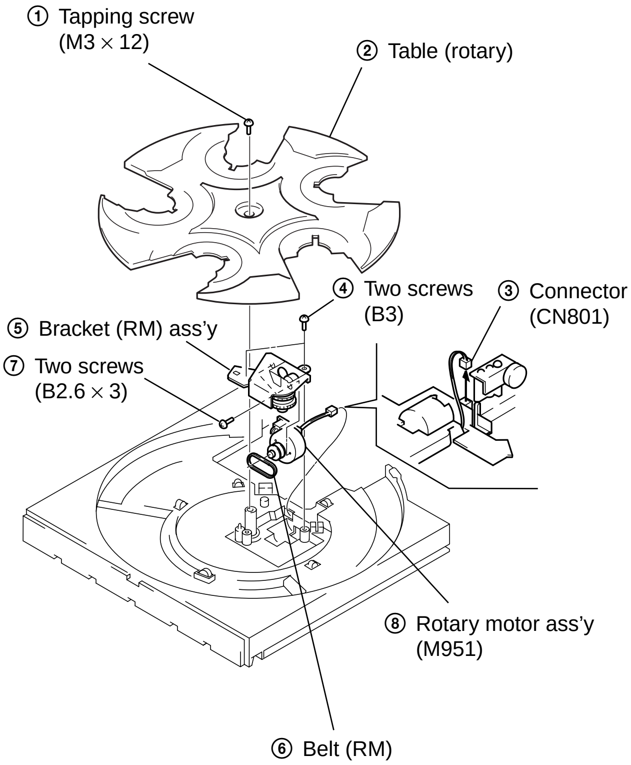
2-4. AU-215 BOARD REMOVAL


⑤ Two screws (B3)
⑥ AU-215 board
② Connector (CN304)
① Connector (CN401)
④ Nine screws (B3)
③ Three flat cables (CN004, 005, 007)

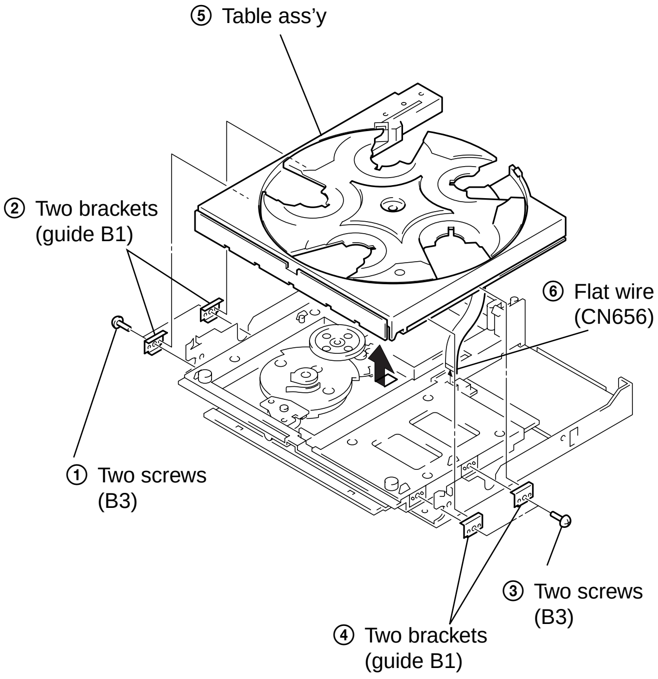
2-5. REAR PANEL SECTION REMOVAL


③ Connector
(CN401)
⑫ Rear panel section
② Two flat cables
(CN002, 003)
④ Connector
(CN001)
⑤ Connector
(CN304)
① Flat cable
(CN006)
⑩ Claw
⑨ Screw
(B3)
⑧ Two screws
(B3)
⑥ Flat cable
(CN009)
⑪ Claw
⑦ Connector
(CN101)

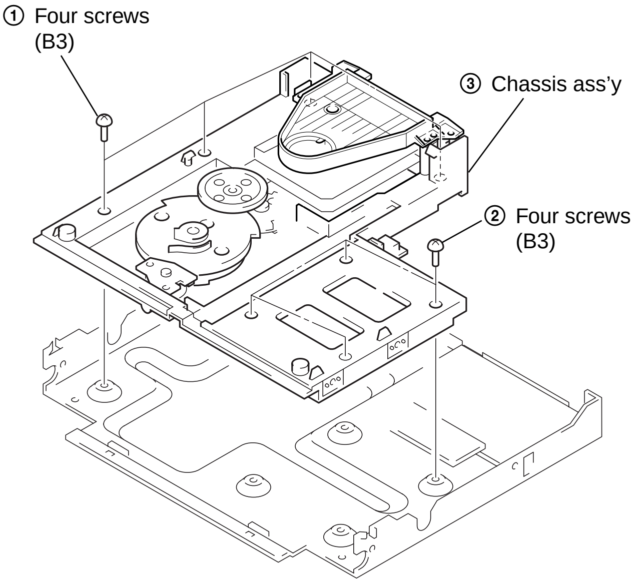
2-7. ROTARY MOTOR ASS'Y (M951) REMOVAL


① Tapping screw
(M3 × 12)
② Table (rotary)
④ Two screws
(B3)
③ Connector
(CN801)
⑤ Bracket (RM) ass'y
⑦ Two screws
(B2.6 × 3)
⑧ Rotary motor ass'y
(M951)
⑥ Belt (RM)

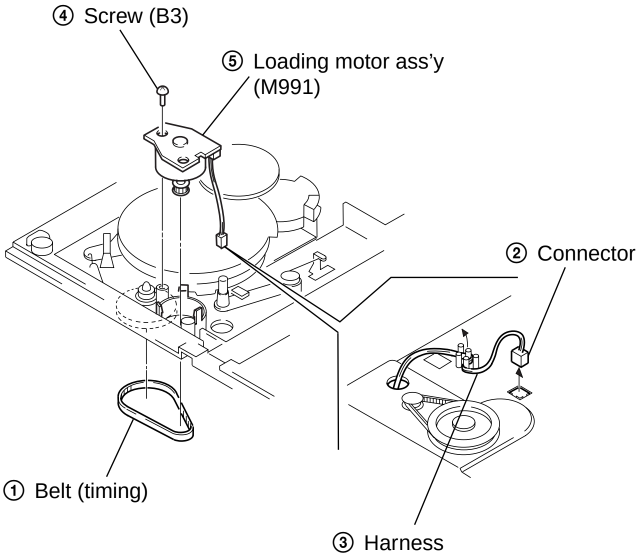
2-6. TABLE ASS'Y REMOVAL


⑤ Table ass'y
② Two brackets
(guide B1)
⑥ Flat wire
(CN656)
① Two screws
(B3)
③ Two screws
(B3)
④ Two brackets
(guide B1)

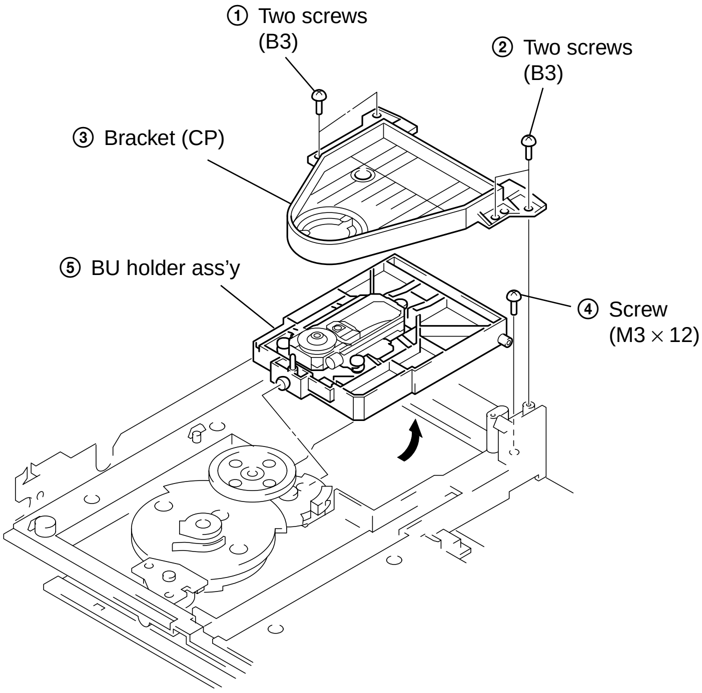
2-8. CHASSIS ASS'Y


① Four screws
(B3)
③ Chassis ass'y
② Four screws
(B3)

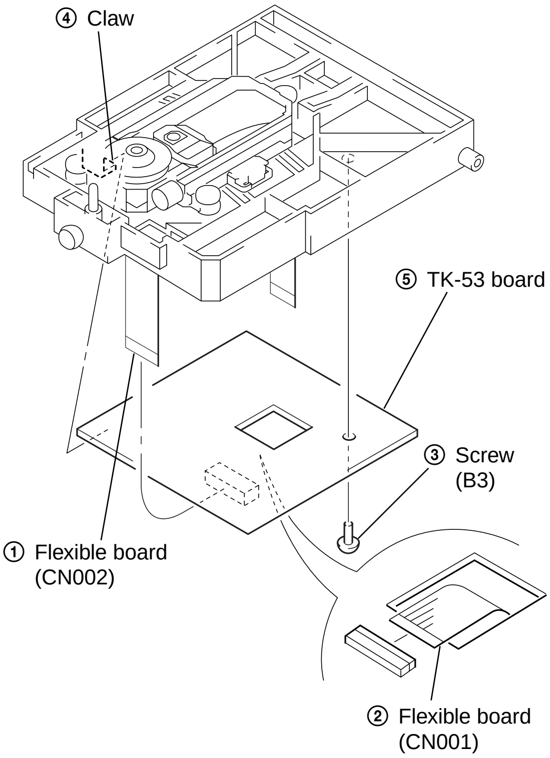
2-9. LOADING MOTOR ASS'Y (M991) REMOVAL


④ Screw (B3)
⑤ Loading motor ass'y (M991)
② Connector
① Belt (timing)
③ Harness

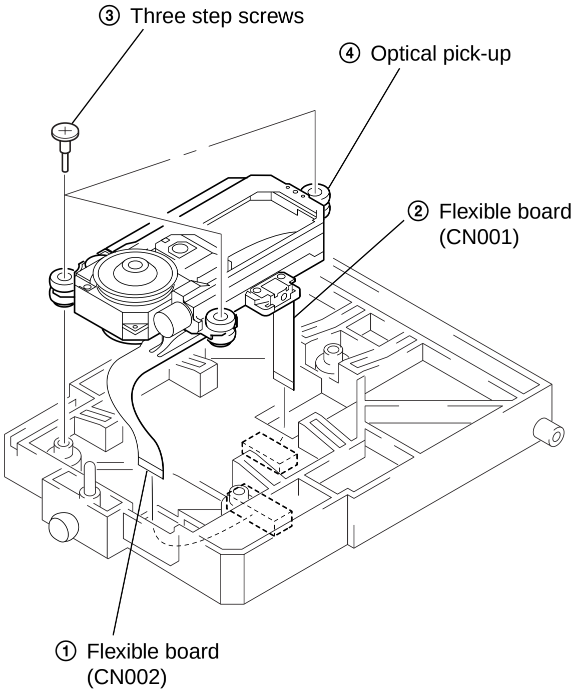
2-10. BU HOLDER ASS'Y REMOVAL


① Two screws (B3)
② Two screws (B3)
③ Bracket (CP)
⑤ BU holder ass'y
④ Screw (M3 × 12)

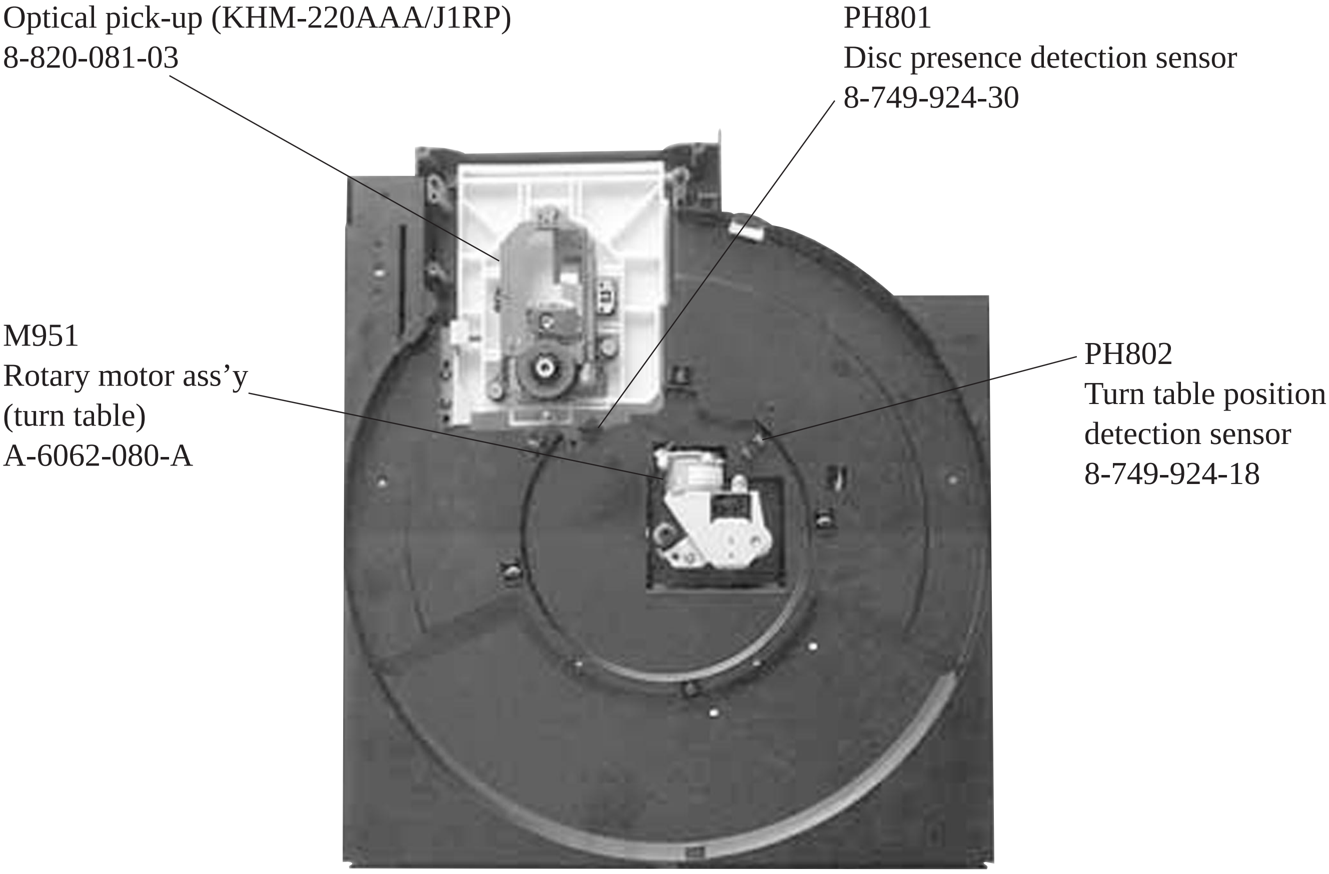
2-11. TK-53 BOARD REMOVAL

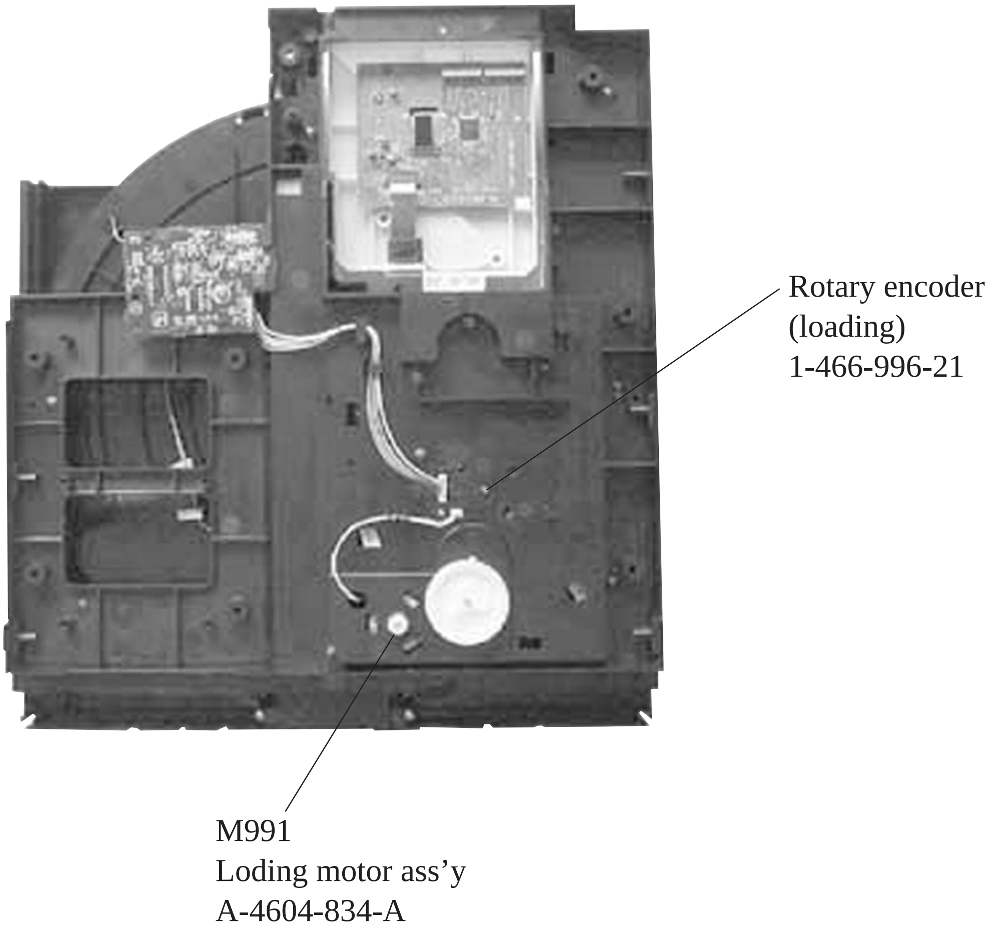

④ Claw
⑤ TK-53 board
③ Screw (B3)
① Flexible board (CN002)
② Flexible board (CN001)

2-12. OPTICAL PICK-UP REMOVAL

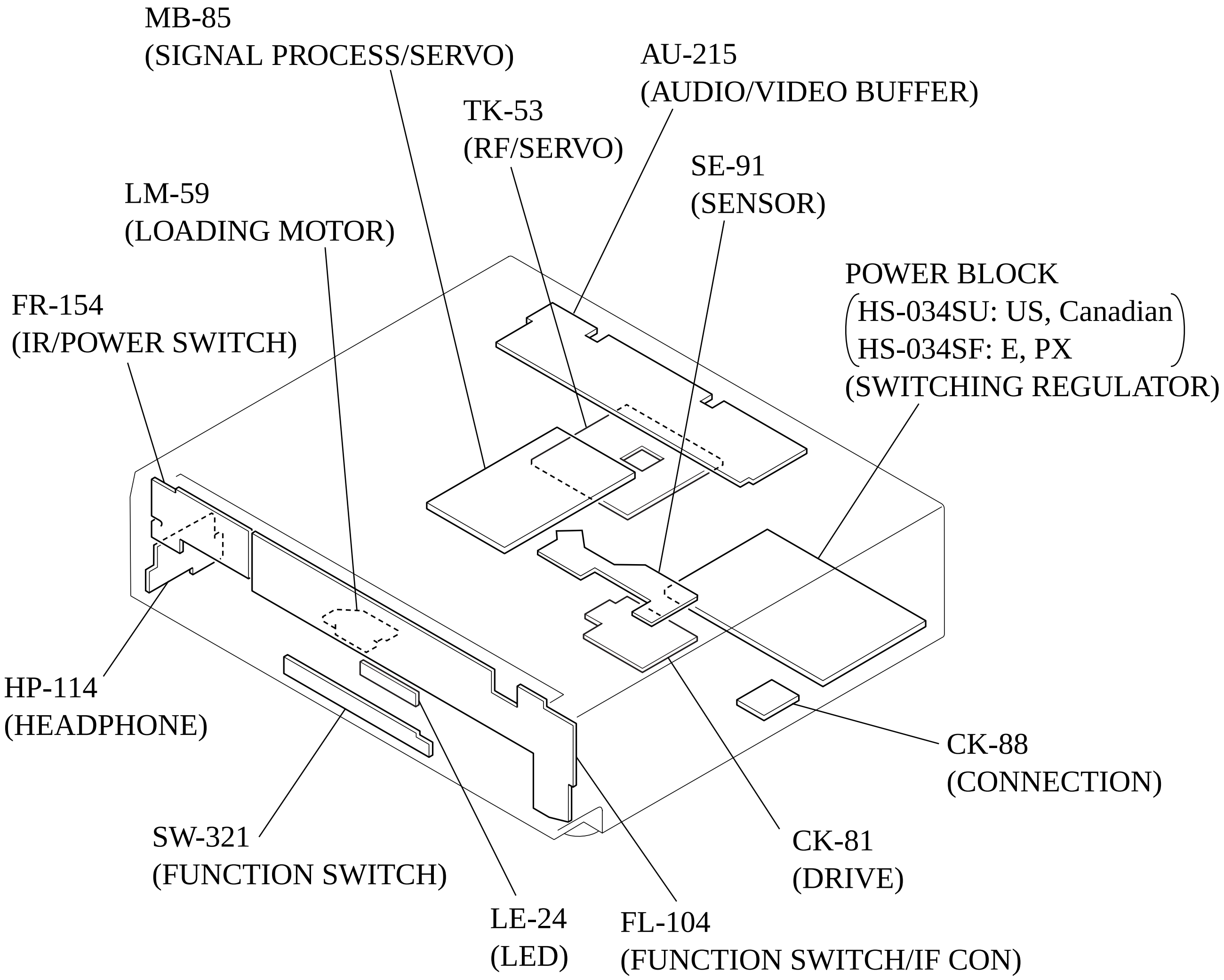

③ Three step screws
④ Optical pick-up
② Flexible board (CN001)
① Flexible board (CN002)

2-13. INTERNAL VIEWS


Optical pick-up (KHM-220AAA/J1RP)
8-820-081-03
PH801
Disc presence detection sensor
8-749-924-30
M951
Rotary motor ass’y
(turn table)
A-6062-080-A
PH802
Turn table position
detection sensor
8-749-924-18

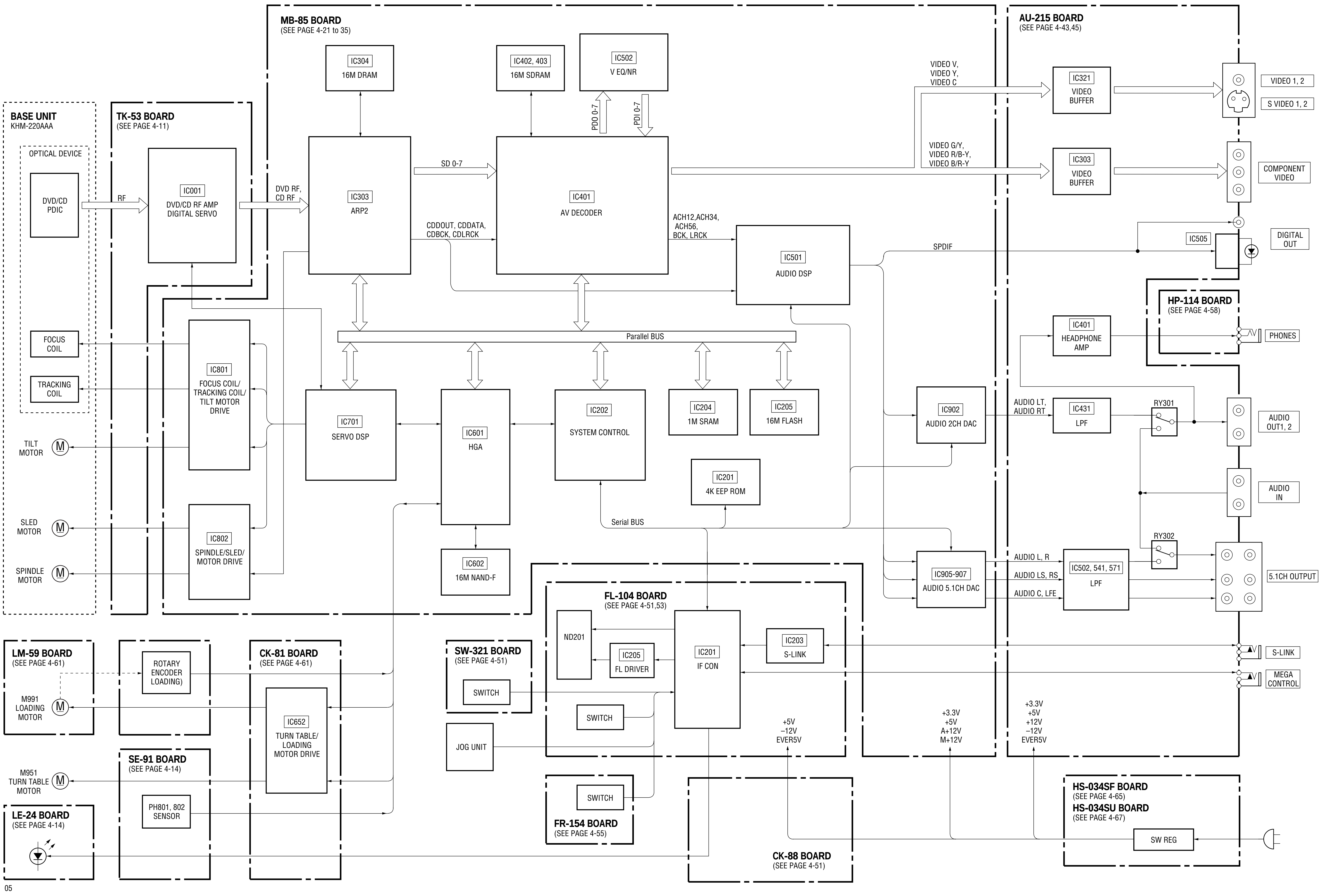

Rotary encoder
(loading)
1-466-996-21
M991
Loding motor ass’y
A-4604-834-A

2-14. CIRCUIT BOARDS LOCATION

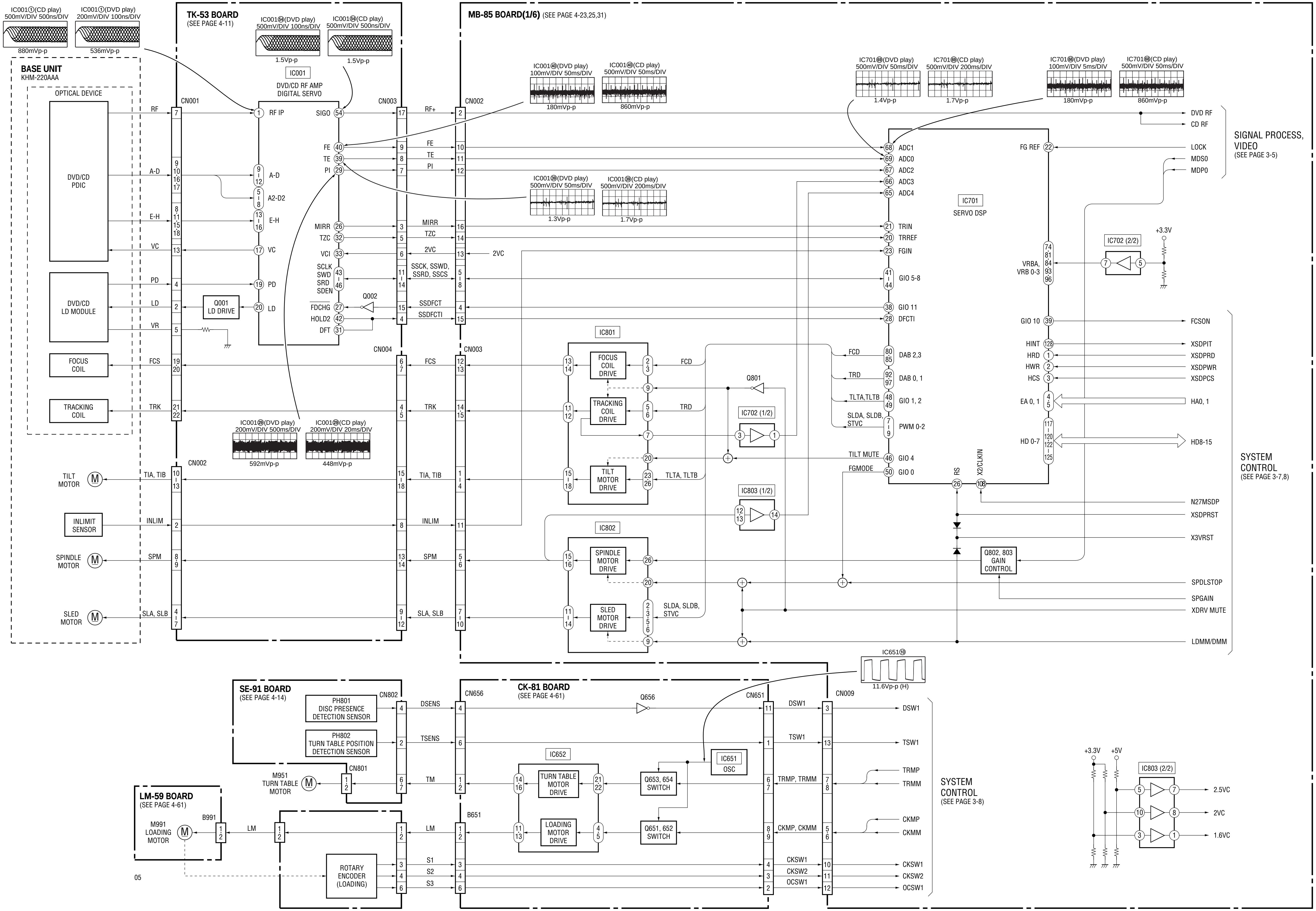

MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
(HS-034SU: US, Canadian
HS-034SF: E, PX)
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

SECTION 3
BLOCK DIAGRAMS

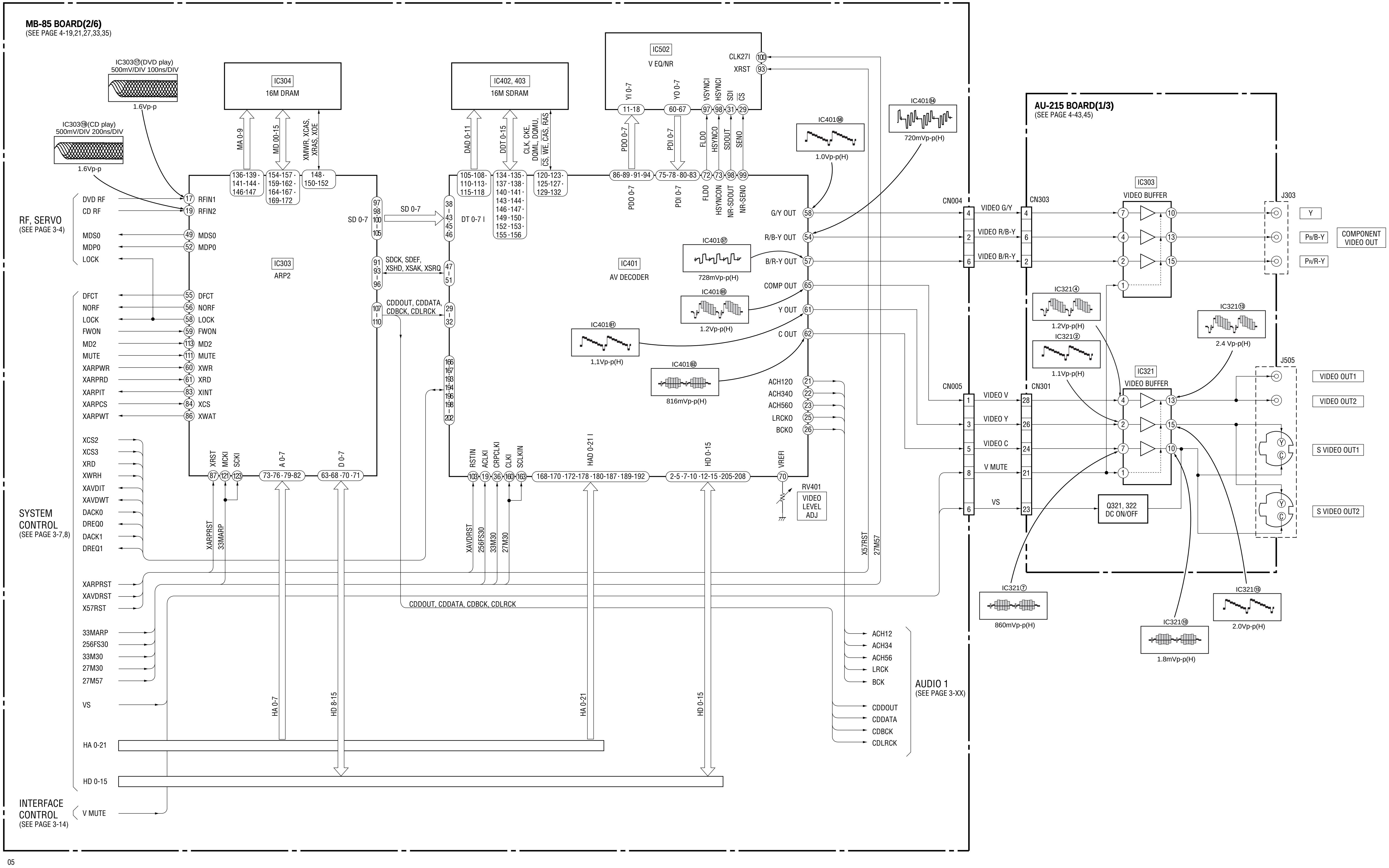
3-1. OVERALL BLOCK DIAGRAM


BASE UNIT
KHM-220AAA
OPTICAL DEVICE
DVD/CD PDIC
FOCUS COIL
TRACKING COIL
TILT MOTOR
SLED MOTOR
SPINDLE MOTOR
M
TK-53 BOARD
(SEE PAGE 4-11)
RF
IC001
DVD/CD RF AMP
DIGITAL SERVO
MB-85 BOARD
(SEE PAGE 4-21 to 35)
DVD RF,
CD RF
IC304
16M DRAM
IC303
ARP2
SD 0-7
IC402, 403
16M SDRAM
IC502
V EQ/NR
PDO 0-7
PDI 0-7
IC401
AV DECODER
CDDOUT, CDDATA,
CDBCK, CDLRCK
ACH12,ACH34,
ACH56,
BCK, LRCK
IC501
AUDIO DSP
SPDIF
VIDEO V,
VIDEO Y,
VIDEO C
VIDEO G/Y,
VIDEO R/B-Y,
VIDEO B/R-Y
Parallel BUS
IC801
FOCUS COIL/
TRACKING COIL/
TILT MOTOR
DRIVE
IC802
SPINDLE/SLED/
MOTOR DRIVE
IC701
SERVO DSP
IC601
HGA
IC602
16M NAND-F
IC202
SYSTEM CONTROL
IC204
1M SRAM
IC205
16M FLASH
IC201
4K EEP ROM
Serial BUS
IC902
AUDIO 2CH DAC
IC905-907
AUDIO 5.1CH DAC
AU-215 BOARD
(SEE PAGE 4-43,45)
IC321
VIDEO BUFFER
IC303
VIDEO BUFFER
VIDEO 1, 2
S VIDEO 1, 2
COMPONENT VIDEO
IC505
DIGITAL OUT
HP-114 BOARD
(SEE PAGE 4-58)
IC401
HEADPHONE AMP
PHONES
AUDIO LT,
AUDIO RT
IC431
LPF
RY301
AUDIO OUT1, 2
AUDIO IN
RY302
AUDIO L, R
AUDIO LS, RS
AUDIO C, LFE
IC502, 541, 571
LPF
5.1CH OUTPUT
S-LINK
MEGA CONTROL
+3.3V
+5V
+12V
–12V
EVER5V
+3.3V
+5V
A+12V
M+12V
+5V
–12V
EVER5V
FL-104 BOARD
(SEE PAGE 4-51,53)
ND201
IC205
FL DRIVER
IC201
IF CON
IC203
S-LINK
SWITCH
SW-321 BOARD
(SEE PAGE 4-51)
SWITCH
JOG UNIT
FR-154 BOARD
(SEE PAGE 4-55)
SWITCH
CK-88 BOARD
(SEE PAGE 4-51)
HS-034SF BOARD
(SEE PAGE 4-65)
HS-034SU BOARD
(SEE PAGE 4-67)
SW REG
LM-59 BOARD
(SEE PAGE 4-61)
M991
LOADING
MOTOR
ROTARY
ENCODER
LOADING)
CK-81 BOARD
(SEE PAGE 4-61)
IC652
TURN TABLE/
LOADING
MOTOR DRIVE
SE-91 BOARD
(SEE PAGE 4-14)
M951
TURN TABLE
MOTOR
PH801, 802
SENSOR
LE-24 BOARD
(SEE PAGE 4-14)
05

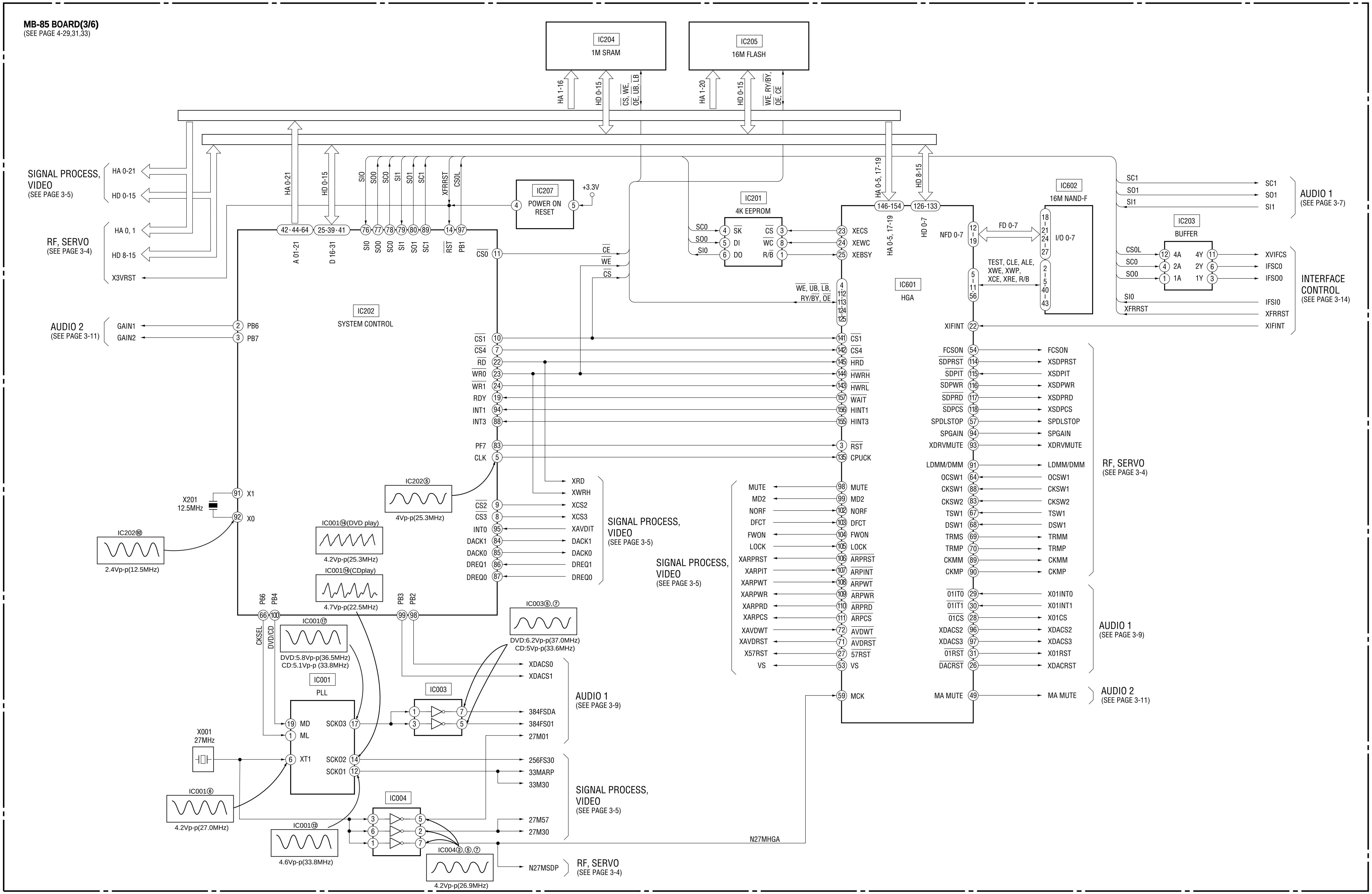
3-2. RF/SERVO BLOCK DIAGRAM


IC001①(CD play) 500mV/DIV 500ns/DIV 880mVp-p
IC001①(DVD play) 200mV/DIV 100ns/DIV 536mVp-p
BASE UNIT
KHM-220AAA
OPTICAL DEVICE
DVD/CD PDIC
DVD/CD LD MODULE
FOCUS COIL
TRACKING COIL
TILT MOTOR
INLIMIT SENSOR
SPINDLE MOTOR
SLED MOTOR
TK-53 BOARD
(SEE PAGE 4-11)
IC001㊺(DVD play) 500mV/DIV 100ns/DIV 1.5Vp-p
IC001㊺(CD play) 500mV/DIV 500ns/DIV 1.5Vp-p
IC001
DVD/CD RF AMP DIGITAL SERVO
CN001
CN002
CN003
CN004
RF
A-D
A2-D2
E-H
VC
PD
LD
VR
FCS
TRK
TIA, TIB
INLIM
SPM
SLA, SLB
Q001 LD DRIVE
Q002
RF IP
SIGO
FE
TE
PI
MIRR
TZC
VCI
SCLK SWD SRD SDEN
FDCHG
HOLD2
DFT
RF+
2VC
SSCK, SSWD, SSRD, SSCS
SSDFCT
SSDFCTI
IC001㉙(DVD play) 200mV/DIV 500ns/DIV 592mVp-p
IC001㉙(CD play) 200mV/DIV 20ms/DIV 448mVp-p
MB-85 BOARD(1/6) (SEE PAGE 4-23,25,31)
IC001㊵(DVD play) 100mV/DIV 50ms/DIV 180mVp-p
IC001㊵(CD play) 500mV/DIV 50ms/DIV 860mVp-p
IC001㊴(DVD play) 500mV/DIV 50ms/DIV 1.3Vp-p
IC001㊴(CD play) 500mV/DIV 200ms/DIV 1.7Vp-p
IC701㊻(DVD play) 500mV/DIV 50ms/DIV 1.4Vp-p
IC701㊻(CD play) 500mV/DIV 200ms/DIV 1.7Vp-p
IC701㊽(DVD play) 100mV/DIV 5ms/DIV 180mVp-p
IC701㊽(CD play) 500mV/DIV 50ms/DIV 860mVp-p
IC801
FOCUS COIL DRIVE
TRACKING COIL DRIVE
TILT MOTOR DRIVE
IC802
SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
Q801
IC702 (1/2)
IC702 (2/2)
IC803 (1/2)
FCD
TRD
TLTA, TLTB
SLDA, SLDB, STVC
IC701
SERVO DSP
ADC1
ADC0
ADC2
ADC3
ADC4
TRIN
TRREF
FGIN
GIO 5-8
GIO 11
DFCTI
DAB 2,3
DAB 0, 1
GIO 1, 2
PWM 0-2
GIO 4
GIO 0
TILT MUTE
FGMODE
RS
X2/CLKIN
FG REF
VRBA, VRB 0-3
GIO 10
HINT
HRD
HWR
HCS
EA 0, 1
HD 0-7
+3.3V
Q802, 803 GAIN CONTROL
DVD RF
CD RF
LOCK
MDS0
MDP0
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
FCSON
XSDPIT
XSDPRD
XSDPWR
XSDPCS
HA0, 1
HD8-15
N27MSDP
XSDPRST
X3VRST
SPDLSTOP
SPGAIN
XDRV MUTE
LDMM/DMM
SYSTEM CONTROL
(SEE PAGE 3-7,8)
IC651⑲ 11.6Vp-p (H)
SE-91 BOARD
(SEE PAGE 4-14)
PH801 DISC PRESENCE DETECTION SENSOR
PH802 TURN TABLE POSITION DETECTION SENSOR
CN802
CN801
M951 TURN TABLE MOTOR
DSENS
TSENS
TM
LM-59 BOARD
(SEE PAGE 4-61)
M991 LOADING MOTOR
B991
LM
ROTARY ENCODER (LOADING)
S1
S2
S3
CK-81 BOARD
(SEE PAGE 4-61)
CN656
CN651
B651
Q656
IC652
TURN TABLE MOTOR DRIVE
LOADING MOTOR DRIVE
Q653, 654 SWITCH
Q651, 652 SWITCH
IC651 OSC
DSW1
TSW1
TRMP, TRMM
CKMP, CKMM
CKSW1
CKSW2
OCSW1
CN009
TRMP
TRMM
CKMP
CKMM
CKSW1
CKSW2
OCSW1
SYSTEM CONTROL
(SEE PAGE 3-8)
+3.3V +5V
IC803 (2/2)
2.5VC
2VC
1.6VC
05

3-3. SIGNAL PROCESS/VIDEO BLOCK DIAGRAM

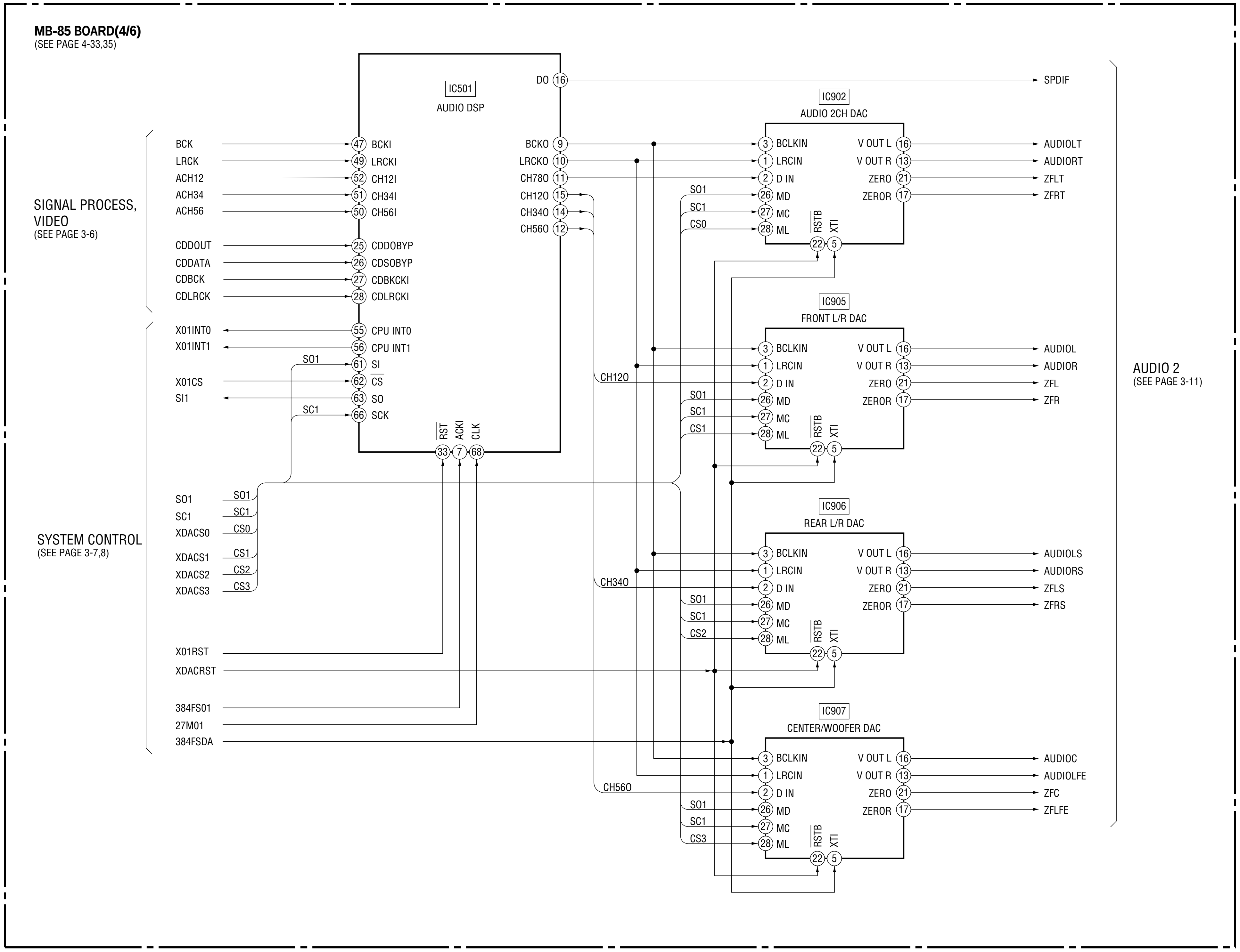

MB-85 BOARD(2/6)
(SEE PAGE 4-19,21,27,33,35)
IC303⑰(DVD play)
500mV/DIV 100ns/DIV
1.6Vp-p
IC303⑲(CD play)
500mV/DIV 200ns/DIV
1.6Vp-p
IC304
16M DRAM
MA 0-9
MD 00-15
XMWR, XCAS, XRAS, XOE
136-139 · 141-144 · 146-147
154-157 · 159-162 · 164-167 · 169-172
148 · 150-152
IC402, 403
16M SDRAM
DAD 0-11
DDT 0-15
CLK, CKE, DQML, DQMU, CS, WE, CAS, RAS
105-108 · 110-113 · 115-118
134-135 · 137-138 · 140-141 · 143-144 · 146-147 · 149-150 · 152-153 · 155-156
120-123 · 125-127 · 129-132
IC502
V EQ/NR
CLK27I
XRST
YI 0-7
YO 0-7
VSYNCI
HSYNCI
SDI
CS
11-18
60-67
PDO 0-7
PDI 0-7
FLDO
HSYNCO
SDOUT
SENO
86-89 · 91-94
75-78 · 80-83
FLDO
HSYNCON
NR-SDOUT
NR-SENO
RF, SERVO
(SEE PAGE 3-4)
DVD RF
CD RF
MDS0
MDP0
LOCK
RFIN1
RFIN2
MDS0
MDP0
DFCT
NORF
LOCK
FWON
MD2
MUTE
XARPWR
XARPRD
XARPIT
XARPCS
XARPWT
DFCT
NORF
LOCK
FWON
MD2
MUTE
XWR
XRD
XINT
XCS
XWAT
IC303
ARP2
SD 0-7
SD 0-7
DT 0-7 I
SDCK, SDEF, XSHD, XSAK, XSRQ
CDDOUT, CDDATA, CDBCK, CDLRCK
IC401
AV DECODER
IC401㊿
1.0Vp-p(H)
IC401(54)
720mVp-p(H)
IC401(57)
728mVp-p(H)
IC401(65)
1.2Vp-p(H)
IC401(61)
1,1Vp-p(H)
IC401(62)
816mVp-p(H)
G/Y OUT
R/B-Y OUT
B/R-Y OUT
COMP OUT
Y OUT
C OUT
ACH12O
ACH34O
ACH56O
LRCKO
BCKO
SYSTEM CONTROL
(SEE PAGE 3-7,8)
XCS2
XCS3
XRD
XWRH
XAVDIT
XAVDWT
DACK0
DREQ0
DACK1
DREQ1
XRST
MCKI
SCKI
A 0-7
D 0-7
73-76 · 79-82
63-68 · 70 · 71
XARPRST
33MARP
RSTIN
ACLKI
CRPCLKI
CLKI
SCLKIN
HAD 0-21 I
HD 0-15
168-170 · 172-178 · 180-187 · 189-192
2-5 · 7-10 · 12-15 · 205-208
VREFI
RV401
VIDEO LEVEL ADJ
XAVDRST
256FS30
33M30
27M30
X57RST
27M57
XARPRST
XAVDRST
X57RST
CDDOUT, CDDATA, CDBCK, CDLRCK
33MARP
256FS30
33M30
27M30
27M57
VS
HA 0-7
HD 8-15
HA 0-21
HD 0-15
HA 0-21
HD 0-15
INTERFACE CONTROL
(SEE PAGE 3-14)
V MUTE
ACH12
ACH34
ACH56
LRCK
BCK
CDDOUT
CDDATA
CDBCK
CDLRCK
AUDIO 1
(SEE PAGE 3-XX)
CN004
VIDEO G/Y
VIDEO R/B-Y
VIDEO B/R-Y
CN005
VIDEO V
VIDEO Y
VIDEO C
V MUTE
VS
AU-215 BOARD(1/3)
(SEE PAGE 4-43,45)
CN303
IC303
VIDEO BUFFER
J303
Y
PB/B-Y
PR/R-Y
COMPONENT VIDEO OUT
CN301
IC321
VIDEO BUFFER
IC321④
1.2Vp-p(H)
IC321②
1.1Vp-p(H)
IC321⑬
2.4 Vp-p(H)
J505
VIDEO OUT1
VIDEO OUT2
S VIDEO OUT1
S VIDEO OUT2
Y
C
Q321, 322
DC ON/OFF
IC321⑦
860mVp-p(H)
IC321⑩
1.8mVp-p(H)
IC321⑮
2.0Vp-p(H)
05

3-4. SYSTEM CONTROL BLOCK DIAGRAM


MB-85 BOARD(3/6)
(SEE PAGE 4-29,31,33)
IC204
1M SRAM
IC205
16M FLASH
HA 1-16
HD 0-15
CS, WE, OE, UB, LB
HA 1-20
HD 0-15
WE, RY/BY, OE, CE
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
HA 0-21
HD 0-15
RF, SERVO
(SEE PAGE 3-4)
HA 0, 1
HD 8-15
X3VRST
AUDIO 2
(SEE PAGE 3-11)
GAIN1
GAIN2
HA 0-21
HD 0-15
SI0
SO0
SC0
SI1
SO1
SC1
XFRRST
CS0L
IC207
POWER ON RESET
+3.3V
42·44-64
25-39·41
A 01-21
D 16-31
RST
PB1
CS0
CE
WE
CS
IC201
4K EEPROM
SK
DI
DO
CS
WC
R/B
XECS
XEWC
XEBSY
IC202
SYSTEM CONTROL
PB6
PB7
CS1
CS4
RD
WR0
WR1
RDY
INT1
INT3
PF7
CLK
WE, UB, LB,
RY/BY, OE
CS1
CS4
HRD
HWRH
HWRL
WAIT
HINT1
HINT3
RST
CPUCK
HA 0-5, 17-19
HD 8-15
146-154
126-133
HA 0-5, 17-19
HD 0-7
NFD 0-7
FD 0-7
IC601
HGA
IC602
16M NAND-F
I/O 0-7
TEST, CLE, ALE, XWE, XWP, XCE, XRE, R/B
IC203
BUFFER
4A 4Y
2A 2Y
1A 1Y
SC1
SO1
SI1
AUDIO 1
(SEE PAGE 3-7)
CS0L
SC0
SO0
SI0
XFRRST
XVIFCS
IFSC0
IFSO0
IFSI0
XFRRST
XIFINT
INTERFACE CONTROL
(SEE PAGE 3-14)
XIFINT
FCSON
SDPRST
SDPIT
SDPWR
SDPRD
SDPCS
SPDLSTOP
SPGAIN
XDRVMUTE
LDMM/DMM
OCSW1
CKSW1
CKSW2
TSW1
DSW1
TRMS
TRMP
CKMM
CKMP
FCSON
XSDPRST
XSDPIT
XSDPWR
XSDPRD
XSDPCS
SPDLSTOP
SPGAIN
XDRVMUTE
LDMM/DMM
OCSW1
CKSW1
CKSW2
TSW1
DSW1
TRMM
TRMP
CKMM
CKMP
RF, SERVO
(SEE PAGE 3-4)
X201
12.5MHz
X1
X0
IC202⑤
4Vp-p(25.3MHz)
IC202㊾
2.4Vp-p(12.5MHz)
XRD
XWRH
CS2
CS3
INT0
DACK1
DACK0
DREQ1
DREQ0
XCS2
XCS3
XAVDIT
DACK1
DACK0
DREQ1
DREQ0
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
IC001⑭(DVD play)
4.2Vp-p(25.3MHz)
IC001⑭(CDplay)
4.7Vp-p(22.5MHz)
P66
PB4
PB3
PB2
MUTE
MD2
NORF
DFCT
FWON
LOCK
XARPRST
XARPIT
XARPWT
XARPWR
XARPRD
XARPCS
XAVDWT
XAVDRST
X57RST
VS
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
MUTE
MD2
NORF
DFCT
FWON
LOCK
ARPRST
ARPINT
ARPWT
ARPWR
ARPRD
ARPCS
AVDWT
AVDRST
57RST
VS
01IT0
01IT1
01CS
XDACS2
XDACS3
01RST
DACRST
X01INT0
X01INT1
X01CS
XDACS2
XDACS3
X01RST
XDACRST
AUDIO 1
(SEE PAGE 3-9)
MCK
MA MUTE
MA MUTE
AUDIO 2
(SEE PAGE 3-11)
CKSEL
DVD/CD
IC001⑰
DVD:5.8Vp-p(36.5MHz)
CD:5.1Vp-p (33.8MHz)
IC003⑤,⑦
DVD:6.2Vp-p(37.0MHz)
CD:5Vp-p(33.6MHz)
XDACS0
XDACS1
AUDIO 1
(SEE PAGE 3-9)
IC001
PLL
MD
ML
XT1
SCK03
SCK02
SCK01
IC003
384FSDA
384FS01
27M01
X001
27MHz
256FS30
33MARP
33M30
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
IC001⑥
4.2Vp-p(27.0MHz)
IC001⑫
4.6Vp-p(33.8MHz)
IC004
27M57
27M30
N27MHGA
IC004②,⑤,⑦
4.2Vp-p(26.9MHz)
N27MSDP
RF, SERVO
(SEE PAGE 3-4)

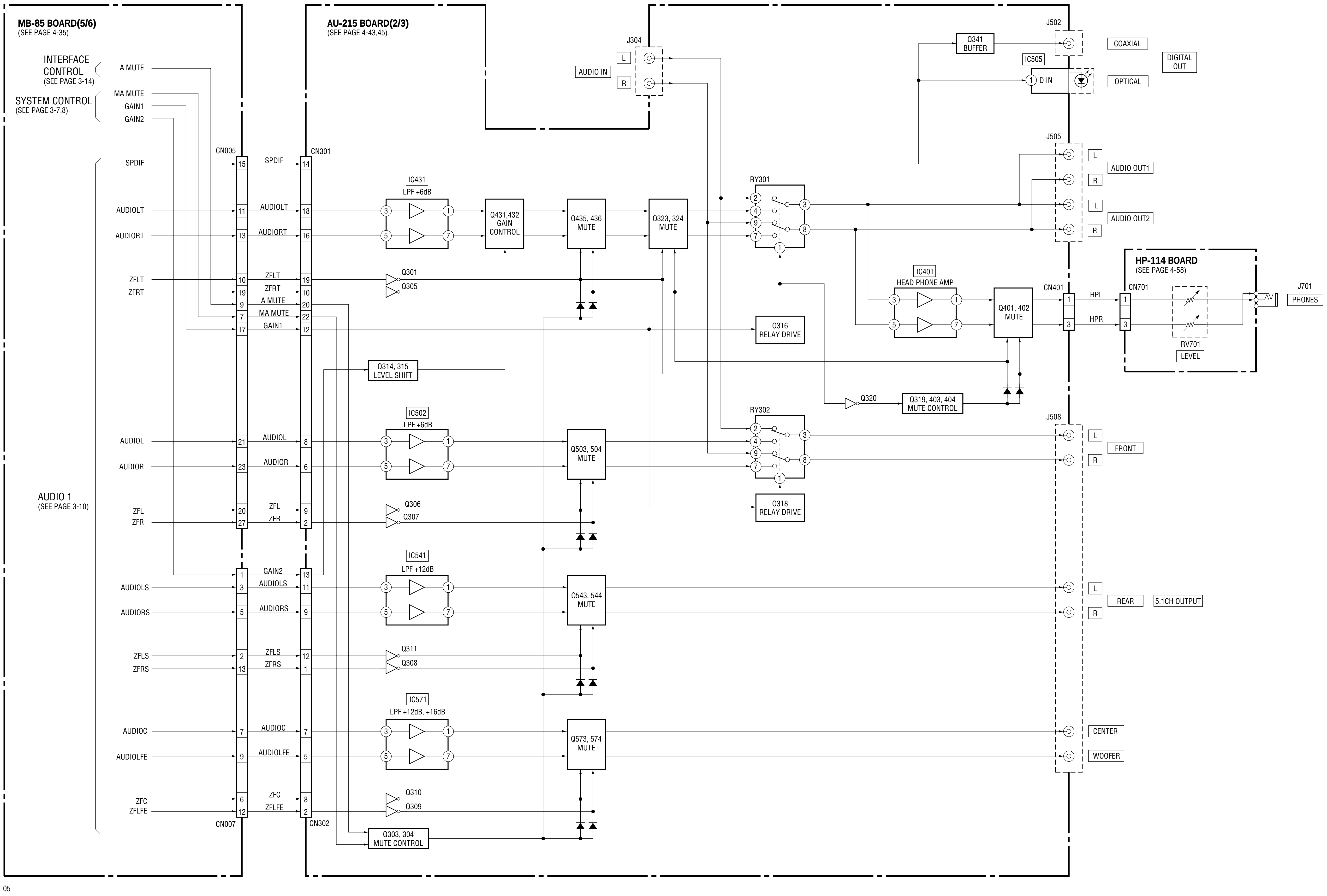
05

3-5. AUDIO (1) BLOCK DIAGRAM

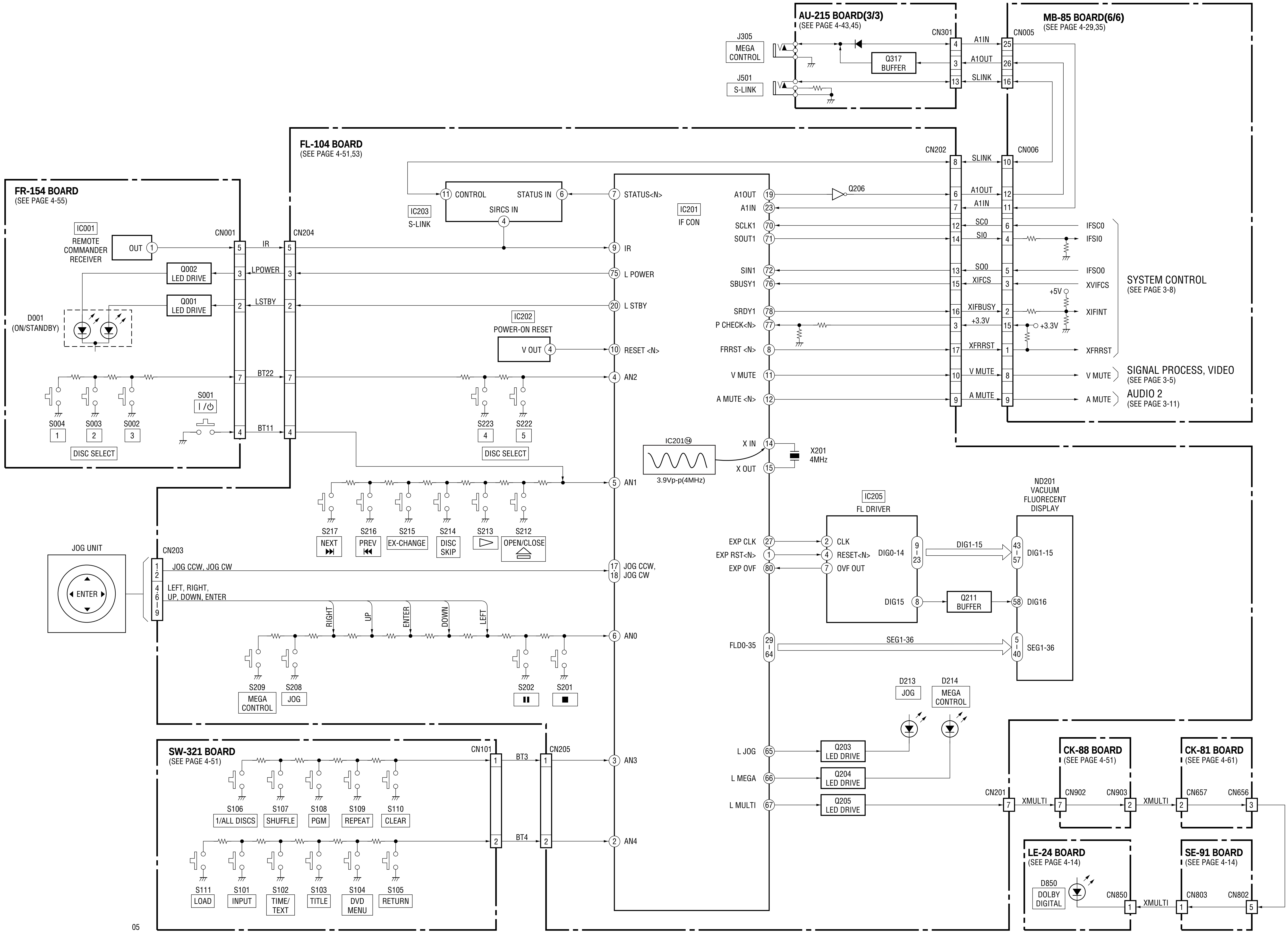

MB-85 BOARD(4/6)
(SEE PAGE 4-33,35)
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-6)
SYSTEM CONTROL
(SEE PAGE 3-7,8)
AUDIO 2
(SEE PAGE 3-11)
IC501
AUDIO DSP
IC902
AUDIO 2CH DAC
IC905
FRONT L/R DAC
IC906
REAR L/R DAC
IC907
CENTER/WOOFER DAC
BCK
LRCK
ACH12
ACH34
ACH56
CDDOUT
CDDATA
CDBCK
CDLRCK
X01INT0
X01INT1
X01CS
SI1
SO1
SC1
XDACS0
XDACS1
XDACS2
XDACS3
CS0
CS1
CS2
CS3
X01RST
XDACRST
384FS01
27M01
384FSDA
47 BCKI
49 LRCKI
52 CH12I
51 CH34I
50 CH56I
25 CDDOBYP
26 CDSOBYP
27 CDBKCKI
28 CDLRCKI
55 CPU INT0
56 CPU INT1
61 SI
62 CS
63 SO
66 SCK
33 RST
7 ACKI
68 CLK
DO 16
BCKO 9
LRCKO 10
CH78O 11
CH12O 15
CH34O 14
CH56O 12
CH12O
CH34O
CH56O
3 BCLKIN
1 LRCIN
2 D IN
26 MD
27 MC
28 ML
22 RSTB
5 XTI
V OUT L 16
V OUT R 13
ZERO 21
ZEROR 17
SPDIF
AUDIOLT
AUDIORT
ZFLT
ZFRT
AUDIOL
AUDIOR
ZFL
ZFR
AUDIOLS
AUDIORS
ZFLS
ZFRS
AUDIOC
AUDIOLFE
ZFC
ZFLFE

05

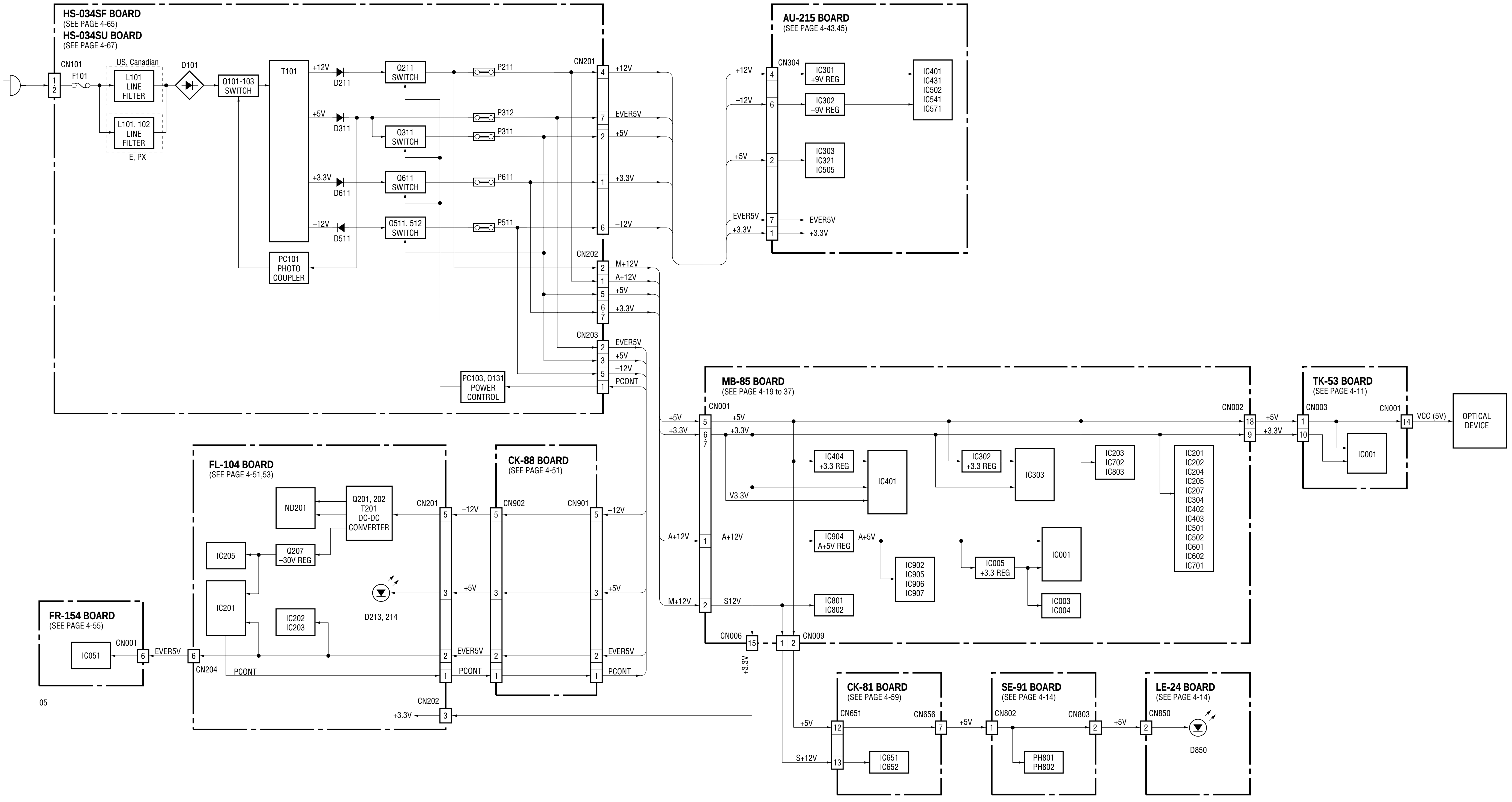
3-6. AUDIO (2) BLOCK DIAGRAM


MB-85 BOARD(5/6)
(SEE PAGE 4-35)
INTERFACE CONTROL
(SEE PAGE 3-14)
SYSTEM CONTROL
(SEE PAGE 3-7,8)
A MUTE
MA MUTE
GAIN1
GAIN2
SPDIF
AUDIOLT
AUDIORT
ZFLT
ZFRT
AUDIO 1
(SEE PAGE 3-10)
AUDIOL
AUDIOR
ZFL
ZFR
AUDIOLS
AUDIORS
ZFLS
ZFRS
AUDIOC
AUDIOLFE
ZFC
ZFLFE
CN005
CN007
AU-215 BOARD(2/3)
(SEE PAGE 4-43,45)
CN301
CN302
SPDIF
AUDIOLT
AUDIORT
ZFLT
ZFRT
A MUTE
MA MUTE
GAIN1
AUDIOL
AUDIOR
ZFL
ZFR
GAIN2
AUDIOLS
AUDIORS
ZFLS
ZFRS
AUDIOC
AUDIOLFE
ZFC
ZFLFE
IC431
LPF +6dB
Q431,432
GAIN CONTROL
Q435, 436
MUTE
Q323, 324
MUTE
Q301
Q305
Q314, 315
LEVEL SHIFT
IC502
LPF +6dB
Q503, 504
MUTE
Q306
Q307
IC541
LPF +12dB
Q543, 544
MUTE
Q311
Q308
IC571
LPF +12dB, +16dB
Q573, 574
MUTE
Q310
Q309
Q303, 304
MUTE CONTROL
J304
AUDIO IN
L
R
RY301
Q316
RELAY DRIVE
RY302
Q318
RELAY DRIVE
Q320
Q319, 403, 404
MUTE CONTROL
IC401
HEAD PHONE AMP
Q401, 402
MUTE
CN401
HPL
HPR
Q341
BUFFER
J502
COAXIAL
IC505
D IN
OPTICAL
DIGITAL OUT
J505
AUDIO OUT1
AUDIO OUT2
J508
FRONT
REAR
5.1CH OUTPUT
CENTER
WOOFER
HP-114 BOARD
(SEE PAGE 4-58)
CN701
RV701
LEVEL
J701
PHONES
05

3-7. INTERFACE CONTROL BLOCK DIAGRAM


AU-215 BOARD(3/3)
(SEE PAGE 4-43,45)
J305
MEGA CONTROL
J501
S-LINK
Q317
BUFFER
CN301
A1IN
A1OUT
SLINK
MB-85 BOARD(6/6)
(SEE PAGE 4-29,35)
CN005
FL-104 BOARD
(SEE PAGE 4-51,53)
CN202
CN006
IC203
S-LINK
CONTROL
STATUS IN
SIRCS IN
STATUS<N>
IC201
IF CON
A1OUT
A1IN
SCLK1
SOUT1
SIN1
SBUSY1
SRDY1
P CHECK<N>
FRRST <N>
V MUTE
A MUTE <N>
Q206
SC0
SI0
SO0
XIFCS
XIFBUSY
+3.3V
XFRRST
IFSC0
IFSI0
IFSO0
XVIFCS
+5V
XIFINT
SYSTEM CONTROL
(SEE PAGE 3-8)
SIGNAL PROCESS, VIDEO
(SEE PAGE 3-5)
AUDIO 2
(SEE PAGE 3-11)
FR-154 BOARD
(SEE PAGE 4-55)
IC001
REMOTE COMMANDER RECEIVER
OUT
CN001
CN204
IR
Q002
LED DRIVE
LPOWER
L POWER
Q001
LED DRIVE
LSTBY
L STBY
D001
(ON/STANDBY)
IC202
POWER-ON RESET
V OUT
RESET <N>
BT22
AN2
S001
I/⏻
BT11
S004 1
S003 2
S002 3
DISC SELECT
S223 4
S222 5
DISC SELECT
IC201⑭
3.9Vp-p(4MHz)
X IN
X OUT
X201
4MHz
AN1
S217 NEXT ⏭
S216 PREV ⏮
S215 EX-CHANGE
S214 DISC SKIP
S213 ▷
S212 OPEN/CLOSE ⏏
JOG UNIT
ENTER
CN203
JOG CCW, JOG CW
LEFT, RIGHT, UP, DOWN, ENTER
RIGHT
UP
ENTER
DOWN
LEFT
AN0
S209 MEGA CONTROL
S208 JOG
S202 ▮▮
S201 ■
IC205
FL DRIVER
EXP CLK
EXP RST<N>
EXP OVF
CLK
RESET<N>
OVF OUT
DIG0-14
DIG15
DIG1-15
Q211
BUFFER
ND201
VACUUM FLUORECENT DISPLAY
DIG1-15
DIG16
FLD0-35
SEG1-36
SEG1-36
D213
JOG
D214
MEGA CONTROL
L JOG
L MEGA
L MULTI
Q203
LED DRIVE
Q204
LED DRIVE
Q205
LED DRIVE
SW-321 BOARD
(SEE PAGE 4-51)
CN101
CN205
BT3
AN3
BT4
AN4
S106 1/ALL DISCS
S107 SHUFFLE
S108 PGM
S109 REPEAT
S110 CLEAR
S111 LOAD
S101 INPUT
S102 TIME/TEXT
S103 TITLE
S104 DVD MENU
S105 RETURN
CN201
XMULTI
CK-88 BOARD
(SEE PAGE 4-51)
CN902
CN903
CK-81 BOARD
(SEE PAGE 4-61)
CN657
CN656
LE-24 BOARD
(SEE PAGE 4-14)
D850
DOLBY DIGITAL
CN850
SE-91 BOARD
(SEE PAGE 4-14)
CN803
CN802
05

3-8. POWER BLOCK DIAGRAM


HS-034SF BOARD
(SEE PAGE 4-65)
HS-034SU BOARD
(SEE PAGE 4-67)
CN101
F101
US, Canadian
L101 LINE FILTER
L101, 102 LINE FILTER
E, PX
D101
Q101-103 SWITCH
T101
+12V
D211
Q211 SWITCH
P211
+5V
D311
P312
Q311 SWITCH
P311
+3.3V
D611
Q611 SWITCH
P611
–12V
D511
Q511, 512 SWITCH
P511
PC101 PHOTO COUPLER
CN201
+12V
EVER5V
+5V
+3.3V
–12V
CN202
M+12V
A+12V
+5V
+3.3V
CN203
EVER5V
+5V
–12V
PCONT
PC103, Q131 POWER CONTROL
AU-215 BOARD
(SEE PAGE 4-43,45)
CN304
+12V
–12V
+5V
EVER5V
+3.3V
IC301 +9V REG
IC302 –9V REG
IC303 IC321 IC505
IC401 IC431 IC502 IC541 IC571
EVER5V
+3.3V
MB-85 BOARD
(SEE PAGE 4-19 to 37)
CN001
+5V
+3.3V
V3.3V
A+12V
M+12V
S12V
IC404 +3.3 REG
IC401
IC302 +3.3 REG
IC303
IC203 IC702 IC803
IC201 IC202 IC204 IC205 IC207 IC304 IC402 IC403 IC501 IC502 IC601 IC602 IC701
IC904 A+5V REG
A+5V
IC902 IC905 IC906 IC907
IC005 +3.3 REG
IC001
IC003 IC004
IC801 IC802
CN002
CN006
CN009
+3.3V
TK-53 BOARD
(SEE PAGE 4-11)
CN003
CN001
+5V
+3.3V
IC001
VCC (5V)
OPTICAL DEVICE
FL-104 BOARD
(SEE PAGE 4-51,53)
ND201
Q201, 202 T201 DC-DC CONVERTER
IC205
Q207 –30V REG
IC201
IC202 IC203
D213, 214
CN201
–12V
+5V
EVER5V
PCONT
CN204
CN202
+3.3V
CK-88 BOARD
(SEE PAGE 4-51)
CN902
CN901
–12V
+5V
EVER5V
PCONT
FR-154 BOARD
(SEE PAGE 4-55)
CN001
IC051
EVER5V
05
CK-81 BOARD
(SEE PAGE 4-59)
CN651
CN656
+5V
S+12V
IC651 IC652
SE-91 BOARD
(SEE PAGE 4-14)
CN802
CN803
+5V
PH801 PH802
LE-24 BOARD
(SEE PAGE 4-14)
CN850
+5V
D850

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary mote is printed in each block.)

For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- ●—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▨ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

For schematic Diagram:

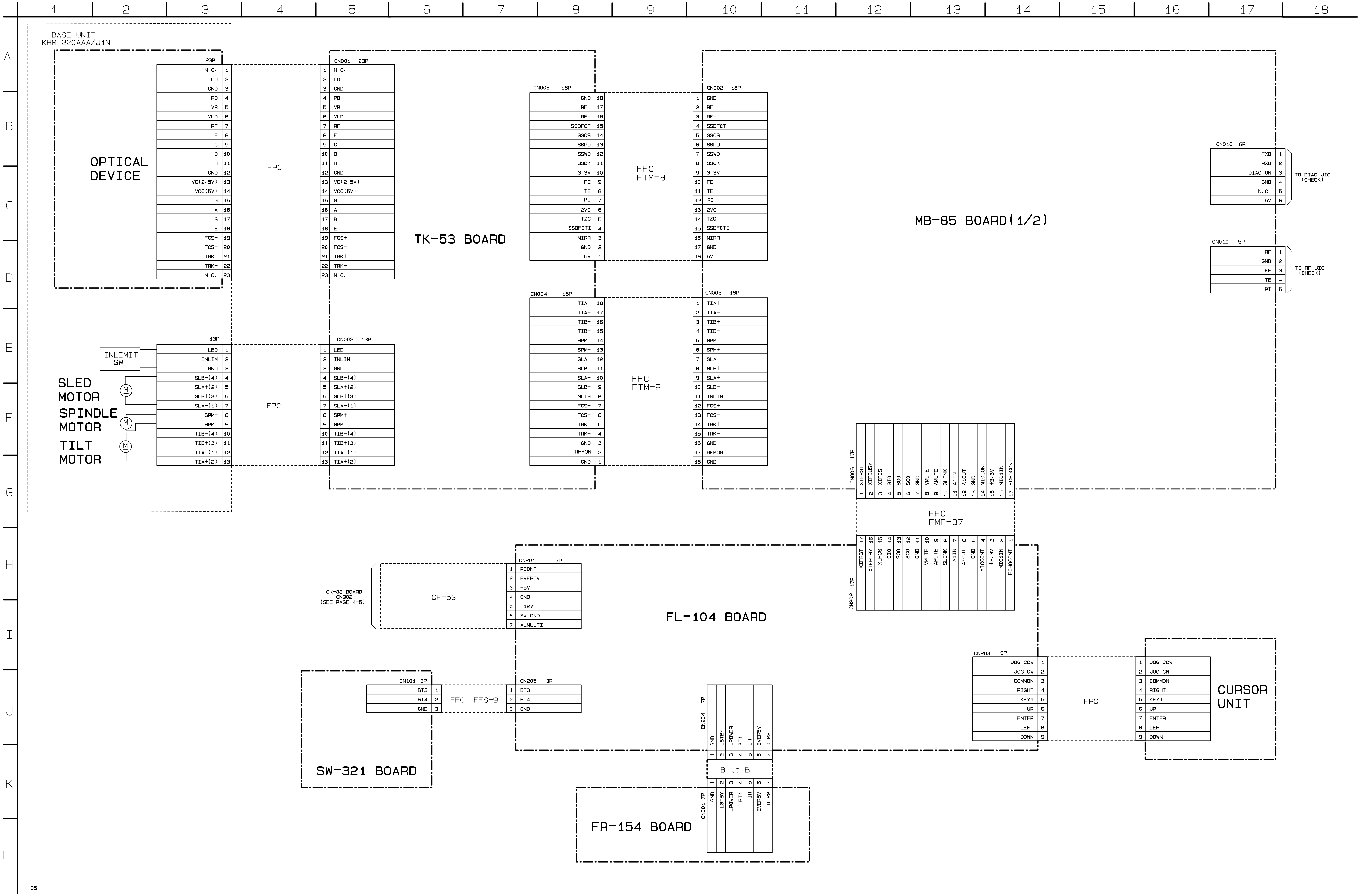
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $^1/_4$ W (Chip resistors : $^1/_{10}$ W) unless otherwise specified.
  kΩ : 1000 Ω, MΩ : 1000 kΩ.
- All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- —▭— : nonflammable resistor.
- —▭— : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- **B +** : B+ Line.
- **B −** : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10 MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

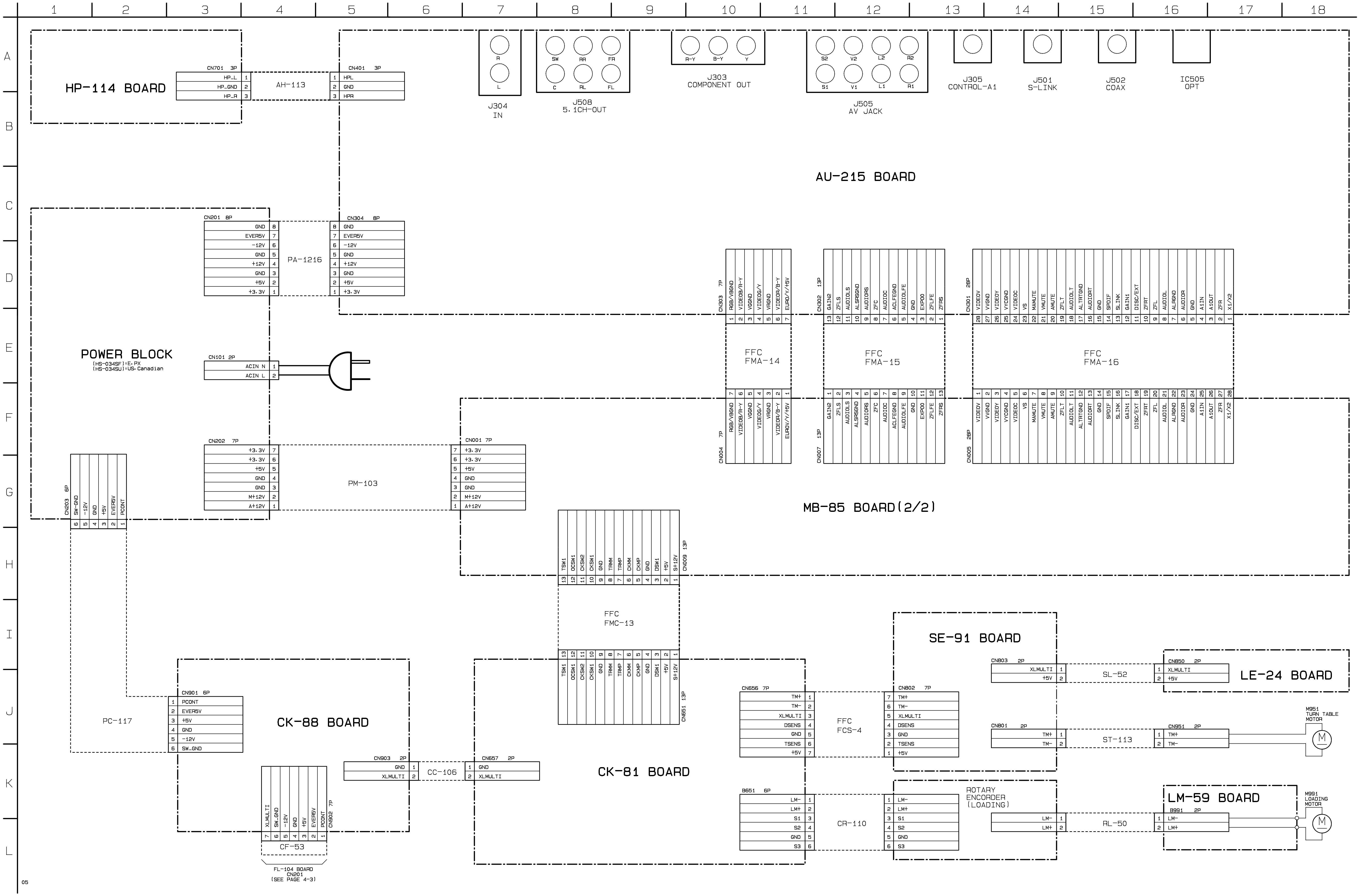
When indicating parts by reference number, please include the board name.

4-1. FRAME SCHEMATIC DIAGRAM

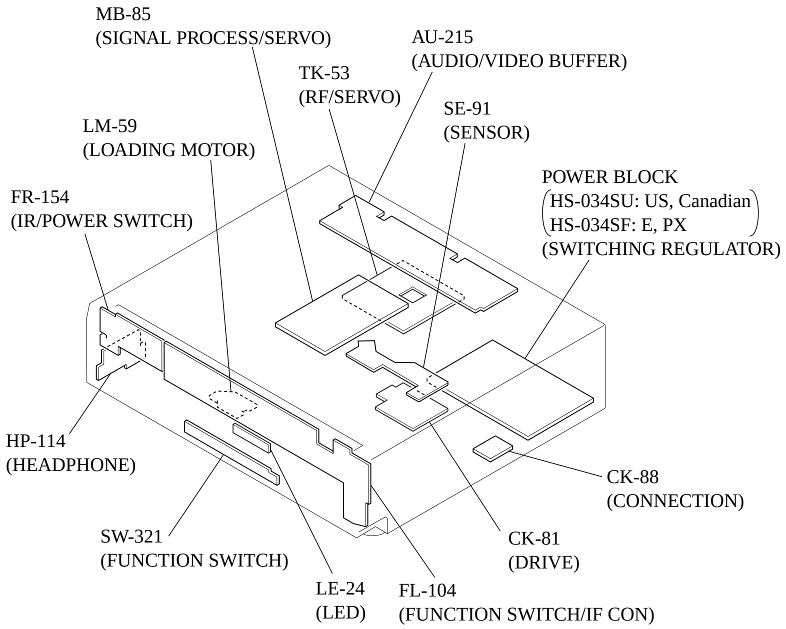
FRAME (1) SCHEMATIC DIAGRAM


BASE UNIT
KHM-220AAA/J1N
OPTICAL DEVICE
23P
FPC
CN001 23P
N.C.
LD
GND
PD
VR
VLD
RF
F
C
D
H
GND
VC(2.5V)
VCC(5V)
G
A
B
E
FCS+
FCS-
TRK+
TRK-
N.C.
TK-53 BOARD
INLIMIT SW
SLED MOTOR
SPINDLE MOTOR
TILT MOTOR
13P
CN002 13P
LED
INLIM
GND
SLB-(4)
SLA+(2)
SLB+(3)
SLA-(1)
SPM+
SPM-
TIB-(4)
TIB+(3)
TIA-(1)
TIA+(2)
CN003 18P
GND
RF+
RF-
SSDFCT
SSCS
SSRD
SSWD
SSCK
3.3V
FE
TE
PI
2VC
TZC
SSDFCTI
MIRR
GND
5V
FFC FTM-8
CN002 18P
CN004 18P
TIA+
TIA-
TIB+
TIB-
SPM-
SPM+
SLA-
SLB+
SLA+
SLB-
INLIM
FCS+
FCS-
TRK+
TRK-
GND
RFMON
GND
FFC FTM-9
CN003 18P
MB-85 BOARD(1/2)
CN010 6P
TXD
RXD
DIAG_ON
GND
N.C.
+5V
TO DIAG JIG (CHECK)
CN012 5P
RF
GND
FE
TE
PI
TO RF JIG (CHECK)
CN006 17P
XIFRST
XIFBUSY
XIFCS
SIO
SOO
SCO
GND
VMUTE
AMUTE
SLINK
A1IN
A1OUT
GND
MICCONT
+3.3V
MIC1IN
ECHOCONT
FFC FMF-37
CN202 17P
FL-104 BOARD
CN201 7P
PCONT
EVER5V
+5V
GND
-12V
SW_GND
XLMULTI
CF-53
CK-88 BOARD CN902 (SEE PAGE 4-5)
CN101 3P
BT3
BT4
GND
FFC FFS-9
CN205 3P
SW-321 BOARD
CN204 7P
LSTBY
LPOWER
BT1
IR
EVER5V
BT22
B to B
CN001 7P
FR-154 BOARD
CN203 9P
JOG CCW
JOG CW
COMMON
RIGHT
KEY1
UP
ENTER
LEFT
DOWN
FPC
CURSOR UNIT
05

FRAME (2) SCHEMATIC DIAGRAM


HP-114 BOARD
CN701 3P
AH-113
CN401 3P
J304 IN
J508 5.1CH-OUT
J303 COMPONENT OUT
J505 AV JACK
J305 CONTROL-A1
J501 S-LINK
J502 COAX
IC505 OPT
AU-215 BOARD
POWER BLOCK
(HS-034SF):E.PX
(HS-034SU):US.Canadian
CN201 8P
PA-1216
CN304 8P
CN101 2P
ACIN N
ACIN L
CN303 7P
CN302 13P
CN301 28P
FFC FMA-14
FFC FMA-15
FFC FMA-16
CN004 7P
CN007 13P
CN005 28P
CN202 7P
PM-103
CN001 7P
CN203 6P
MB-85 BOARD(2/2)
CN009 13P
FFC FMC-13
CN651 13P
SE-91 BOARD
CN803 2P
SL-52
CN850 2P
LE-24 BOARD
CN901 6P
PC-117
CK-88 BOARD
CN656 7P
FFC FCS-4
CN802 7P
CN801 2P
ST-113
CN951 2P
M951 TURN TABLE MOTOR
CN903 2P
CC-106
CN657 2P
CK-81 BOARD
B651 6P
CR-110
ROTARY ENCODER (LOADING)
RL-50
LM-59 BOARD
B991 2P
M991 LOADING MOTOR
CN902 7P
CF-53
FL-104 BOARD CN201 (SEE PAGE 4-3)
05

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
FR-154
(IR/POWER SWITCH)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

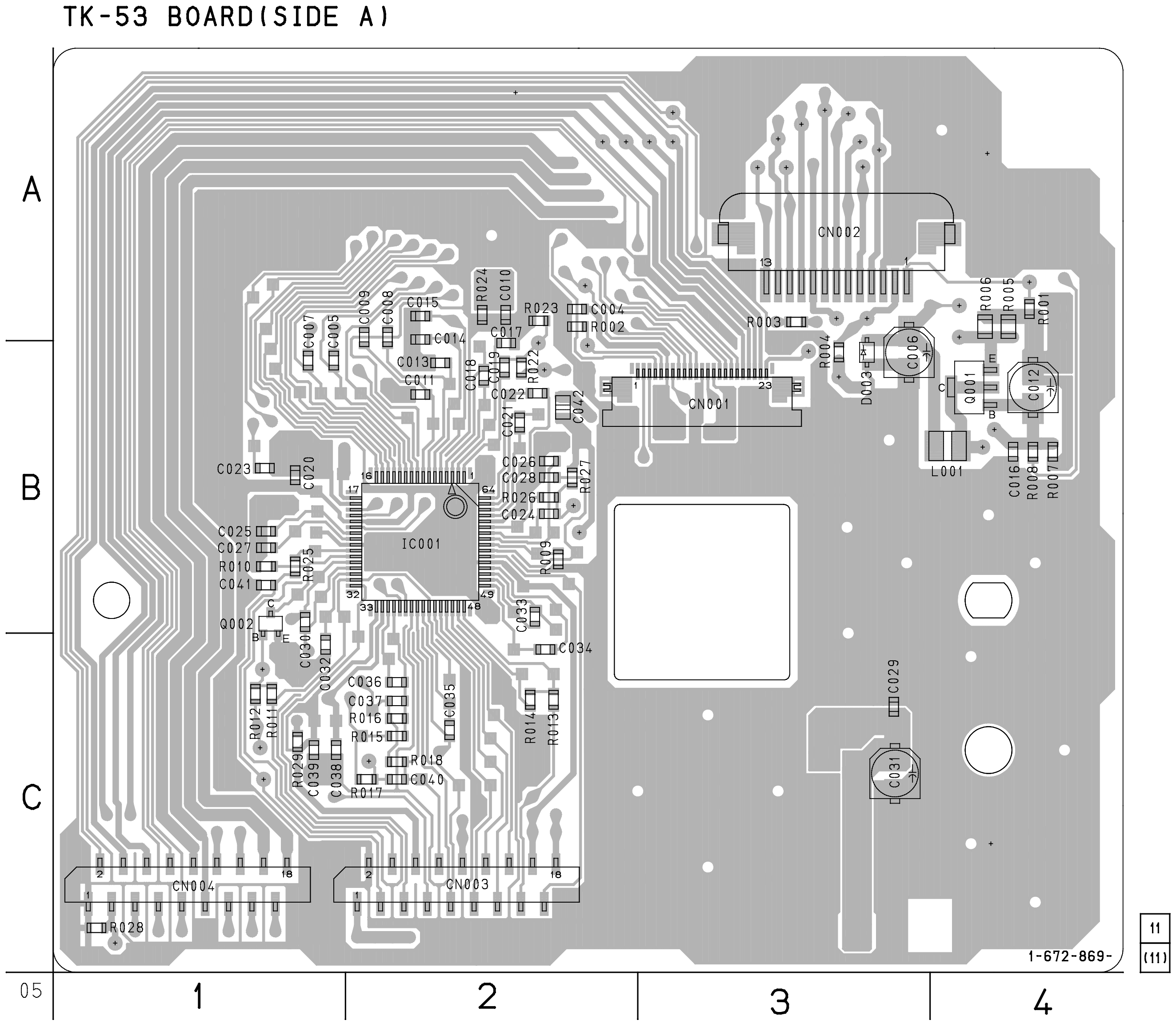
TK-53 BOARD (SIDE A)

CN001	B-3
CN002	A-3
CN003	C-2
CN004	C-1
D003	B-3
IC001	B-2
Q001	B-4
Q002	B-1

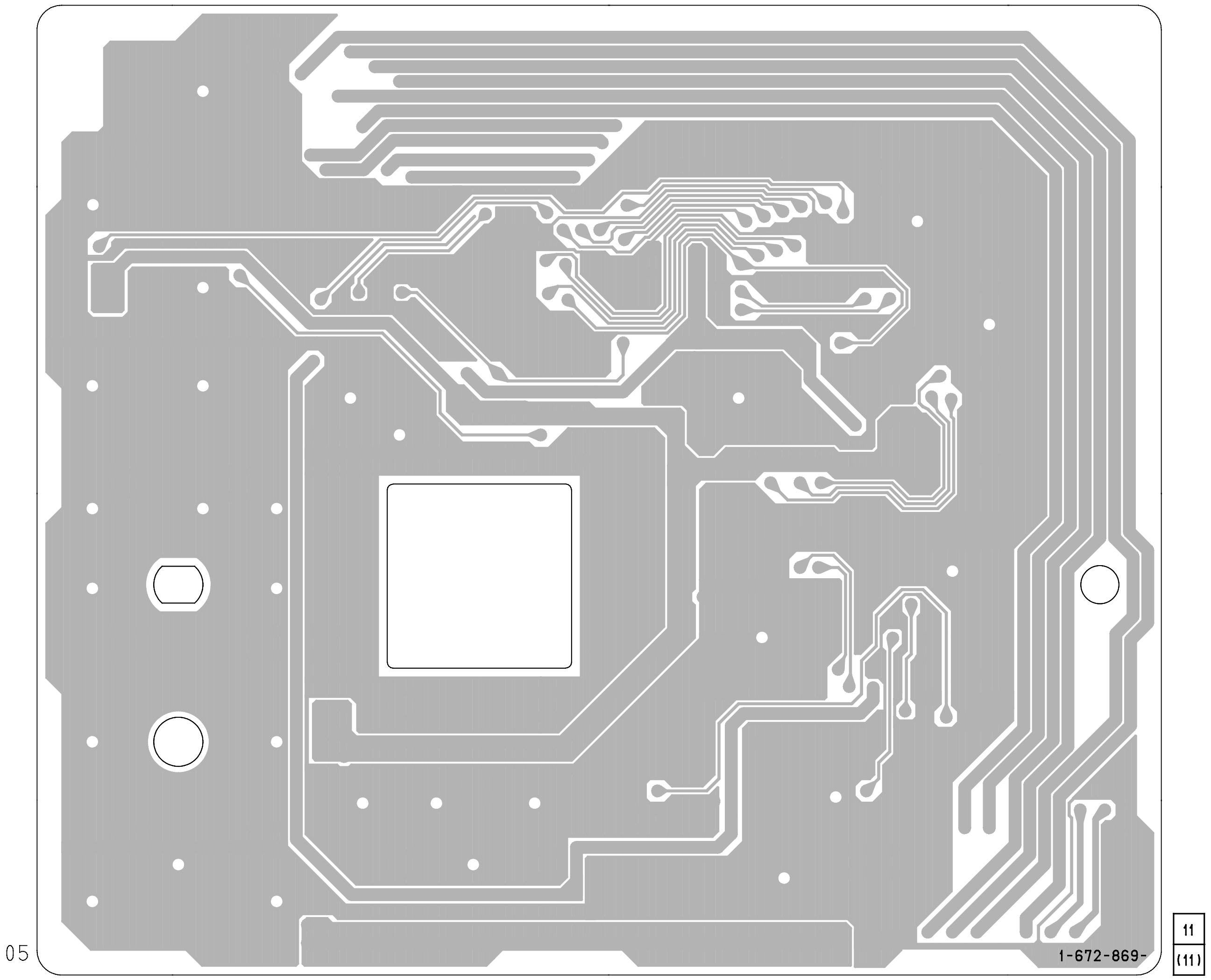
TK-53 (RF/SERVO) PRINTED WIRING BOARD

– Ref. No.: TK-53 board; 3,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

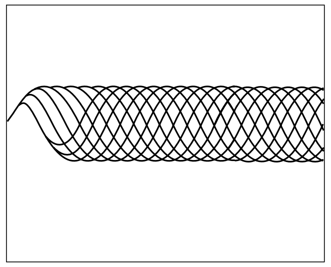

TK-53 BOARD(SIDE A)
A
B
C
1
2
3
4
05
CN002
CN001
CN003
CN004
IC001
Q001
Q002
L001
D003
C004
C005
C006
C007
C008
C009
C010
C011
C012
C013
C014
C015
C016
C017
C018
C019
C020
C021
C022
C023
C024
C025
C026
C027
C028
C029
C030
C031
C032
C033
C034
C035
C036
C037
C038
C039
C040
C041
C042
R001
R002
R003
R004
R005
R006
R007
R008
R009
R010
R011
R012
R013
R014
R015
R016
R017
R018
R022
R023
R024
R025
R026
R027
R028
R029
1-672-869-
11
(11)

TK-53 BOARD(SIDE B)



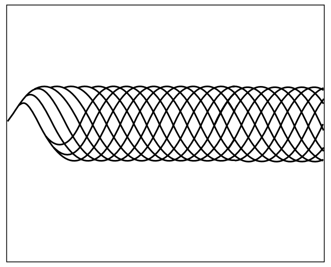
- **Waveforms**

❶ IC001 ① (DVD play)
200 mV/DIV 100 ns/DIV



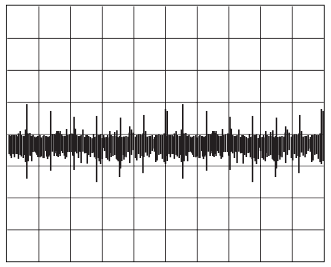
536 mVp-p

❷ IC001 ① (CD play)
500 mV/DIV 500 ns/DIV



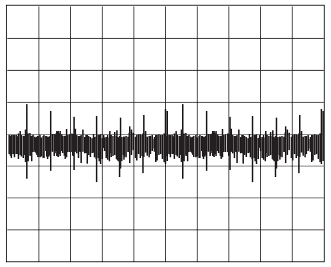
880 mVp-p

❸ IC001 ㉙ (DVD play)
200 mV/DIV 500 ms/DIV



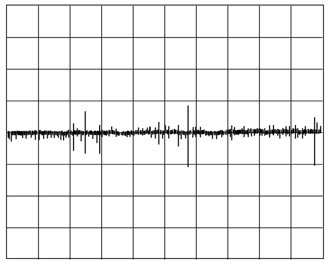
592 mVp-p

❹ IC001 ㉙ (CD play)
200 mV/DIV 20 ms/DIV



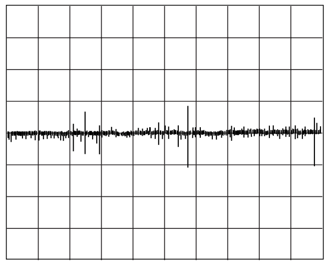
448 mVp-p

❺ IC001 ㊴ (DVD play)
500 mV/DIV 50 ms/DIV



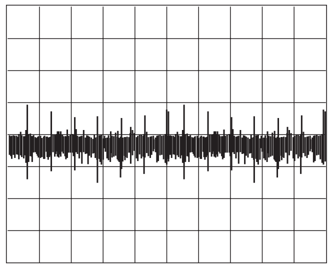
1.3 Vp-p

❻ IC001 ㊴ (CD play)
500 mV/DIV 200 ms/DIV



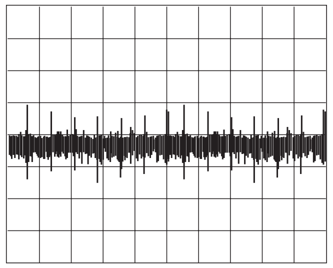
1.7 Vp-p

❼ IC001 ㊵ (DVD play)
100 mV/DIV 50 ms/DIV



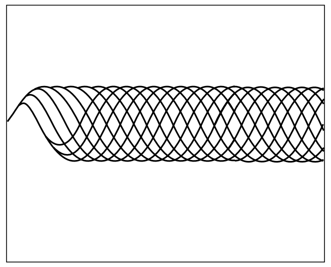
180 mVp-p

❽ IC001 ㊵ (CD play)
500 mV/DIV 50 ms/DIV



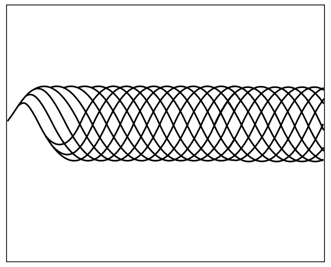
860 mVp-p

❾ IC001 (54) (DVD play)
500 mV/DIV 100 ns/DIV



1.5 Vp-p

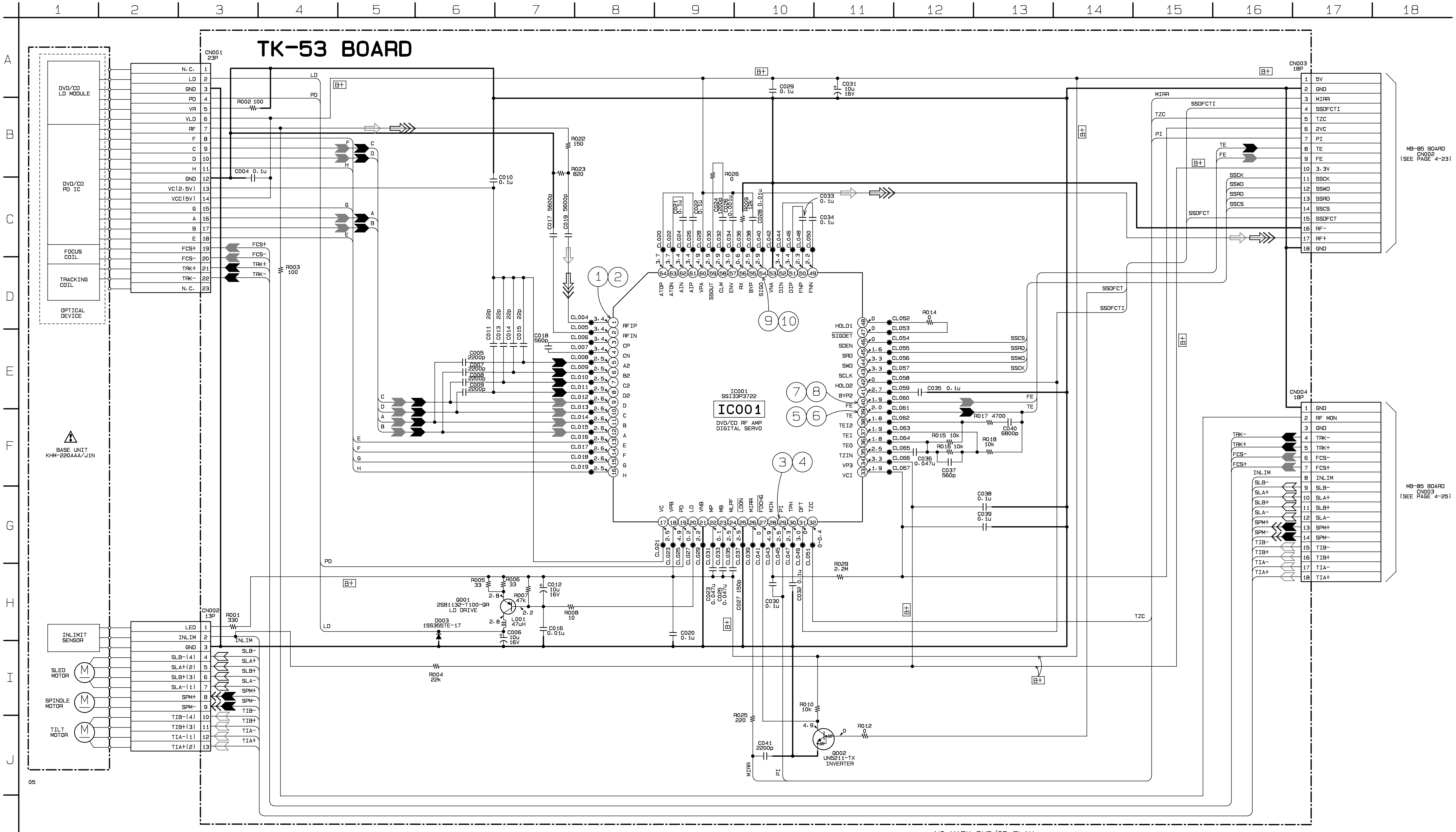
❿ IC001 (54) (CD play)
500 mV/DIV 500 ns/DIV



1.5 Vp-p

TK-53 (RF/SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board and page 4-10 for waveforms.

– Ref. No.: TK-53 board; 3,000 series –


TK-53 BOARD
CN001 23P
CN002 13P
CN003 18P
CN004 18P
IC001 SS133P3722
DVD/CD RF AMP DIGITAL SERVO
DVD/CD LD MODULE
DVD/CD PD IC
FOCUS COIL
TRACKING COIL
OPTICAL DEVICE
BASE UNIT KHM-220AAA/J1N
INLIMIT SENSOR
SLED MOTOR
SPINDLE MOTOR
TILT MOTOR
Q001 2SB1132-T100-QR LD DRIVE
D003 1SS355TE-17
Q002 UN5211-TX INVERTER
MB-85 BOARD CN002 (SEE PAGE 4-23)
MB-85 BOARD CN003 (SEE PAGE 4-25)
05

NO MARK:DVD/CD PLAY
• SIGNAL PATH

SPINDLE SERVO(SPEED AND PHASE)	➡⟫
TRACKING SERVO DVD/CD CDV	➡
SLED SERVO DVD/CD	▷
FOCUS SERVO	➡
SKEW SERVO DVD/CD	▷

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
PB	⇨⟫	⇨

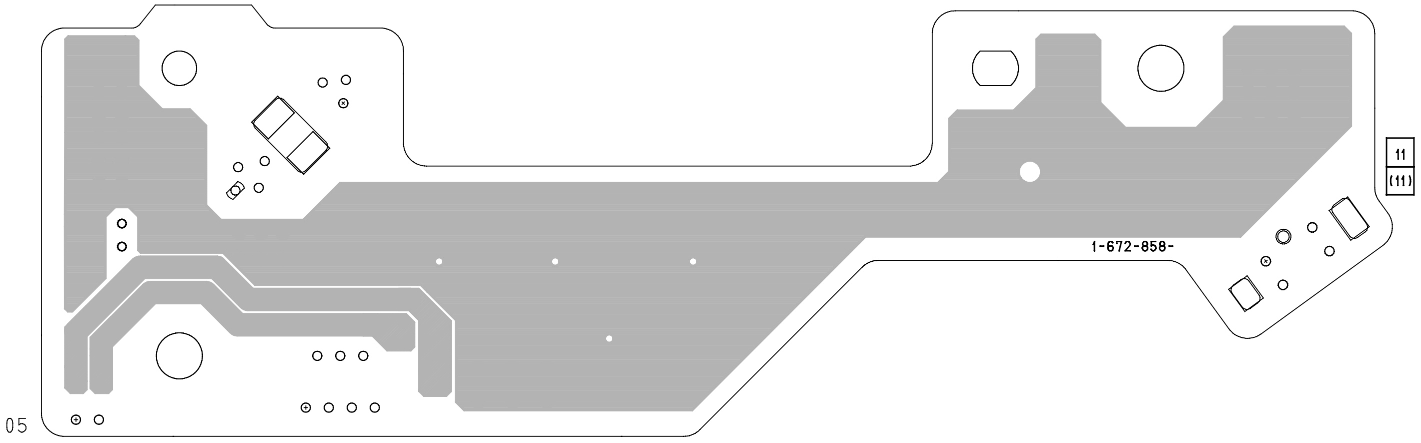
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SE-91 (SENSOR), LE-24 (LED) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

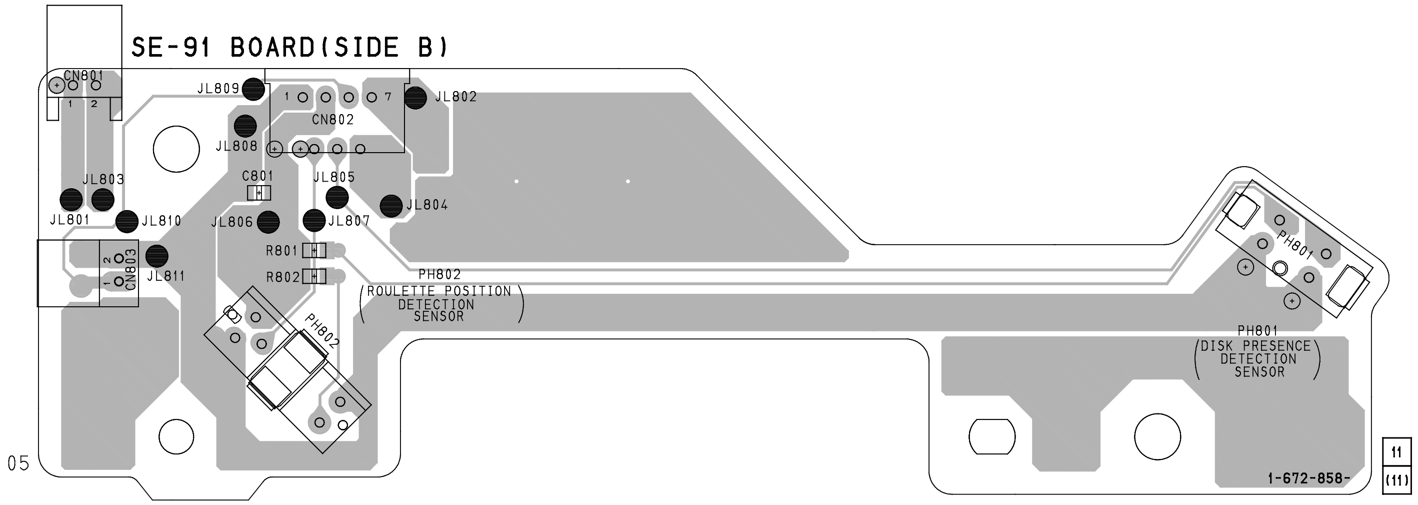
– Ref. No.: SE-91 board and LE-24 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

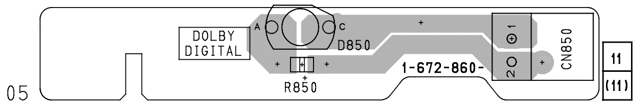
SE-91 BOARD(SIDE A)

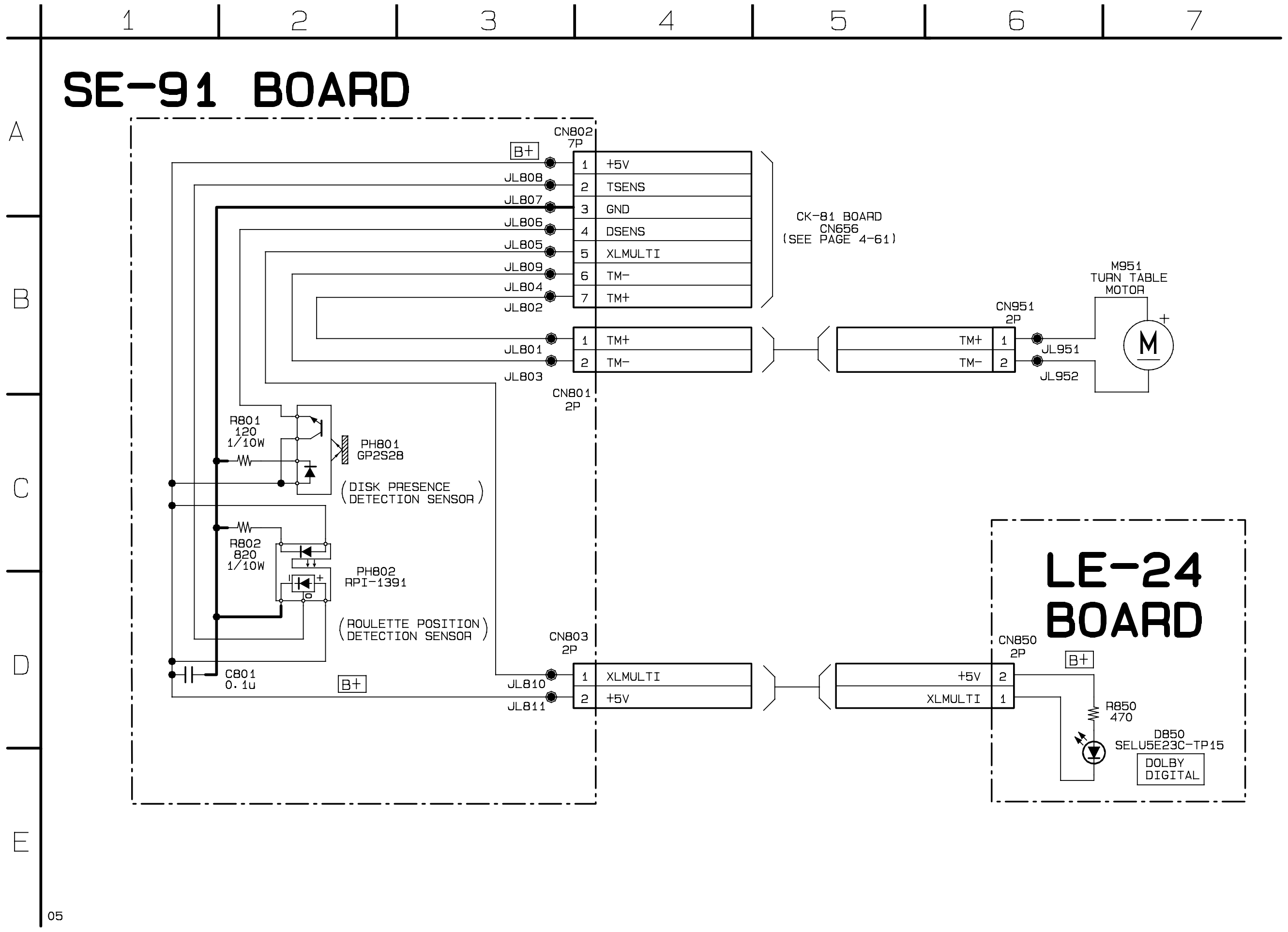

1-672-858-
11
(11)
05

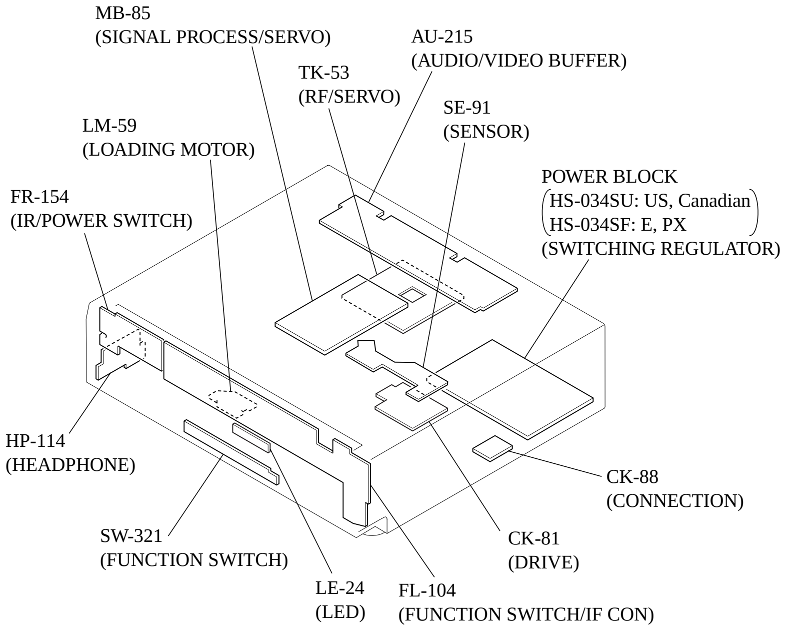
SE-91 BOARD(SIDE B)


CN801
1 2
JL809
1 7
CN802
JL802
JL808
C801
JL805
JL803
JL804
JL801
JL810
JL806
JL807
R801
R802
CN803
JL811
PH802
(ROULETTE POSITION DETECTION SENSOR)
PH802
PH801
PH801
(DISK PRESENCE DETECTION SENSOR)
1-672-858-
11
(11)
05

LE-24 BOARD


DOLBY DIGITAL
A
C
D850
R850
1-672-860-
CN850
11
(11)
05


1
2
3
4
5
6
7
A
B
C
D
E
SE-91 BOARD
CN802 7P
B+
1 +5V
2 TSENS
3 GND
4 DSENS
5 XLMULTI
6 TM-
7 TM+
JL808
JL807
JL806
JL805
JL809
JL804
JL802
CK-81 BOARD CN656 (SEE PAGE 4-61)
M951 TURN TABLE MOTOR
M
CN951 2P
TM+ 1
TM- 2
JL951
JL952
1 TM+
2 TM-
JL801
JL803
CN801 2P
R801 120 1/10W
PH801 GP2S28
(DISK PRESENCE DETECTION SENSOR)
R802 820 1/10W
PH802 RPI-1391
(ROULETTE POSITION DETECTION SENSOR)
CN803 2P
C801 0.1u
B+
JL810
JL811
1 XLMULTI
2 +5V
LE-24 BOARD
CN850 2P
B+
+5V 2
XLMULTI 1
R850 470
D850 SELU5E23C-TP15
DOLBY DIGITAL
05


MB-85 (SIGNAL PROCESS/SERVO)
AU-215 (AUDIO/VIDEO BUFFER)
TK-53 (RF/SERVO)
SE-91 (SENSOR)
LM-59 (LOADING MOTOR)
POWER BLOCK (HS-034SU: US, Canadian HS-034SF: E, PX) (SWITCHING REGULATOR)
FR-154 (IR/POWER SWITCH)
HP-114 (HEADPHONE)
CK-88 (CONNECTION)
SW-321 (FUNCTION SWITCH)
CK-81 (DRIVE)
LE-24 (LED)
FL-104 (FUNCTION SWITCH/IF CON)

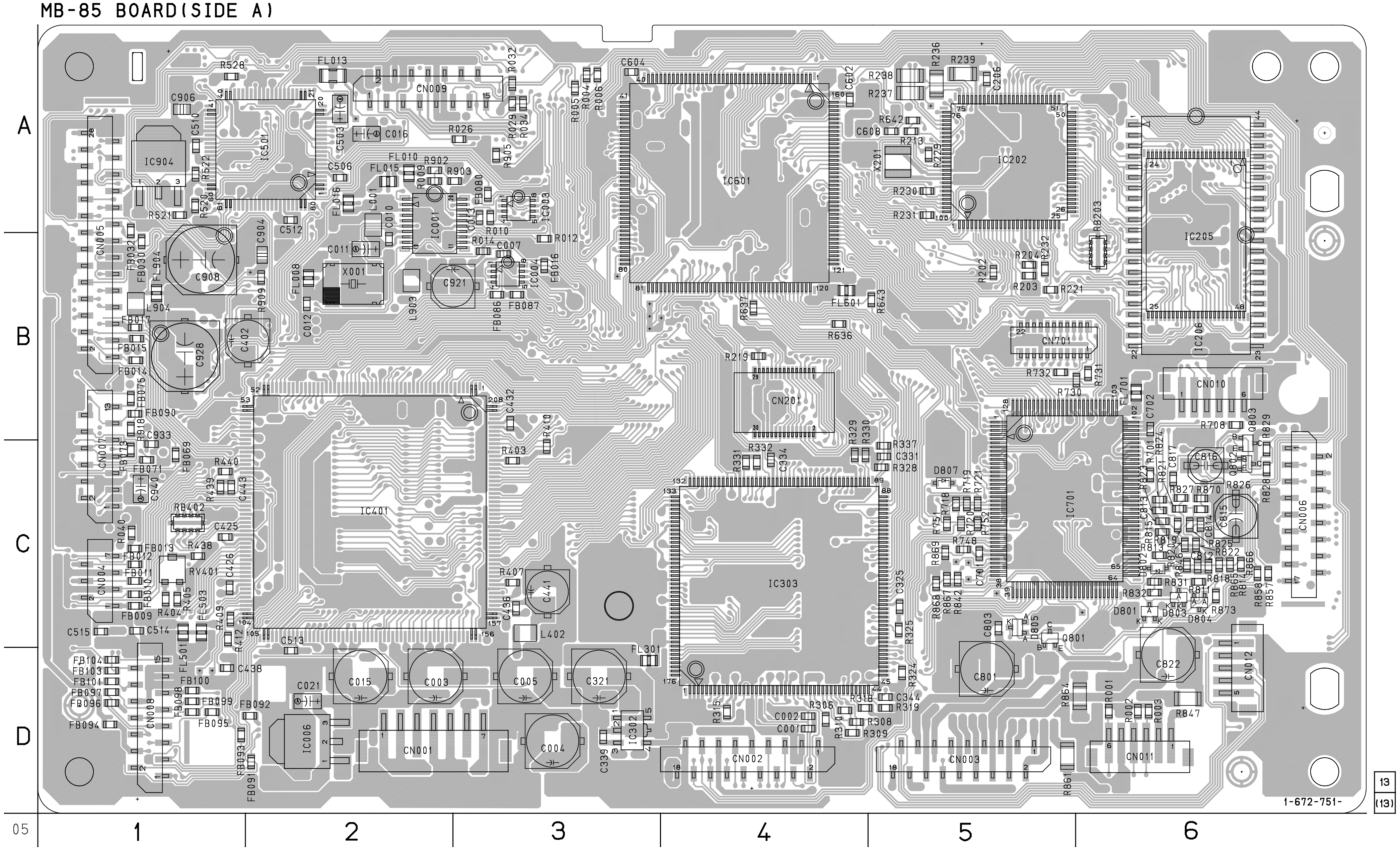
MB-85 (SIGNAL PROCESS) PRINTED WIRING BOARD

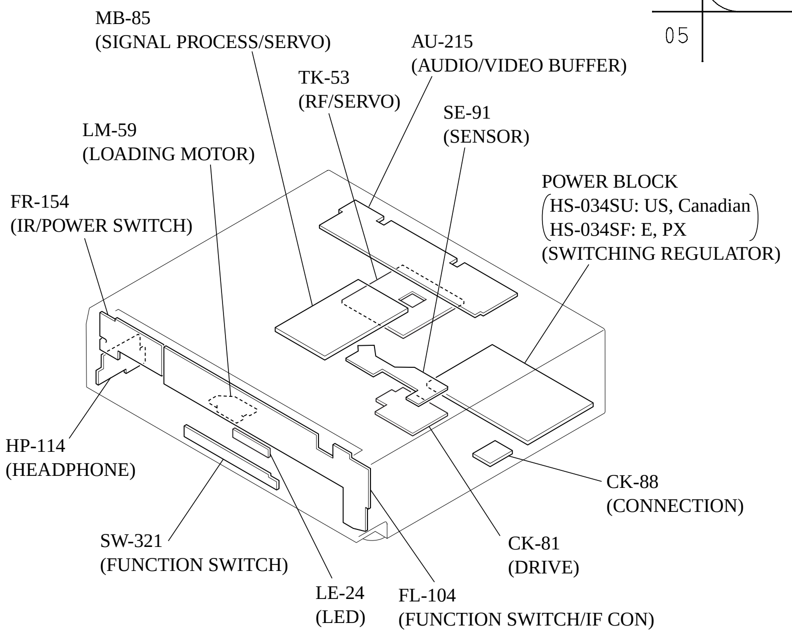
– Ref. No.: MB-85 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

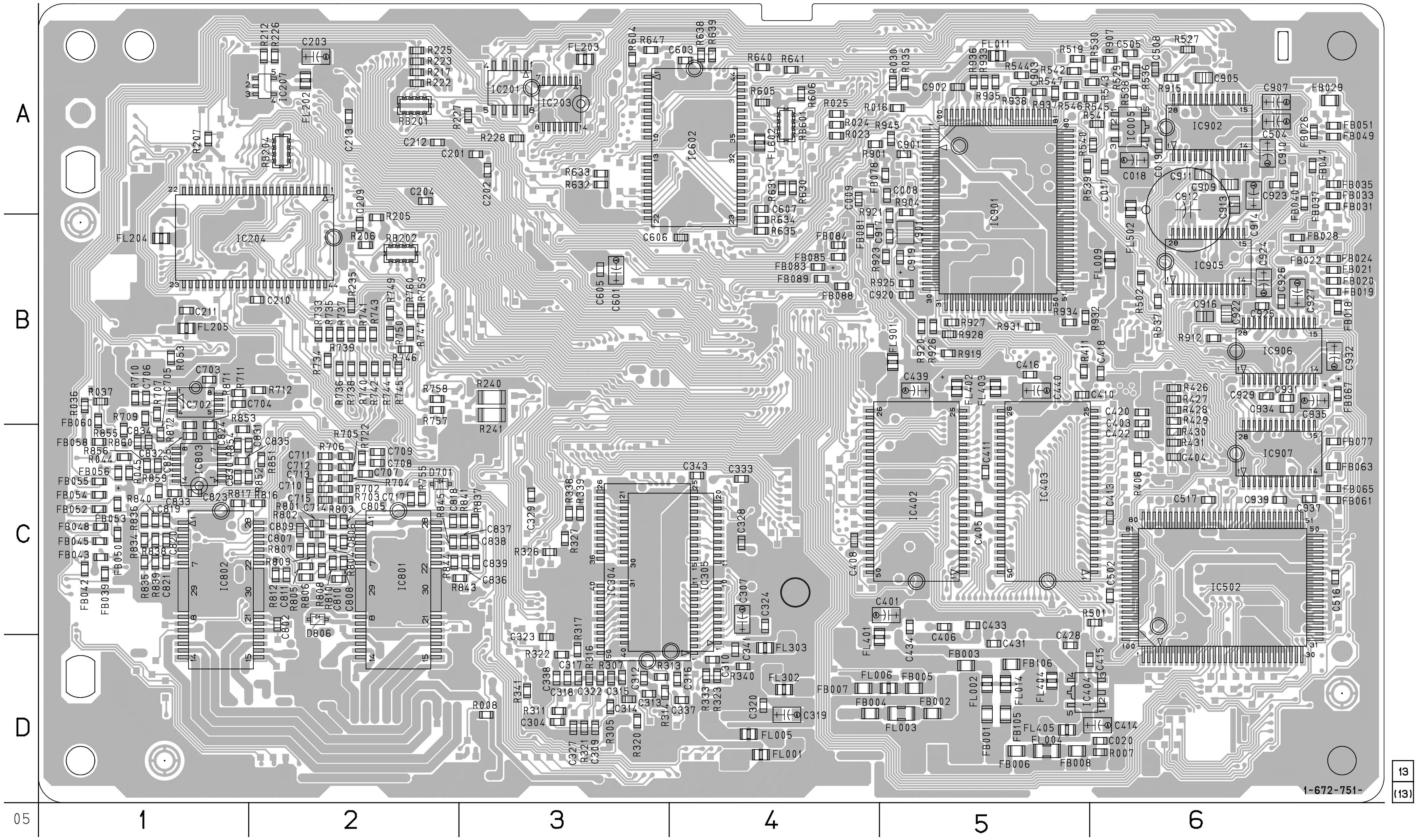
MB-85 BOARD (SIDE A)

CN001	D-2
CN002	D-4
CN003	D-5
CN004	C-1
CN005	B-1
CN006	C-6
CN007	C-1
CN009	A-2
CN010	B-6
CN012	D-6
D801	C-6
D802	C-6
D803	C-6
D804	C-6
D805	C-5
D807	C-5
IC001	A-2
IC003	A-3
IC004	B-3
IC202	A-5
IC205	B-6
IC302	D-3
IC303	C-4
IC401	C-2
IC501	A-2
IC601	A-4
IC701	C-5
IC904	A-1
Q801	C-5
Q802	C-6
Q803	C-6


MB-85 BOARD(SIDE A)
A
B
C
D
05
1
2
3
4
5
6
1-672-751-
13
(13)


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

MB-85 BOARD(SIDE B)

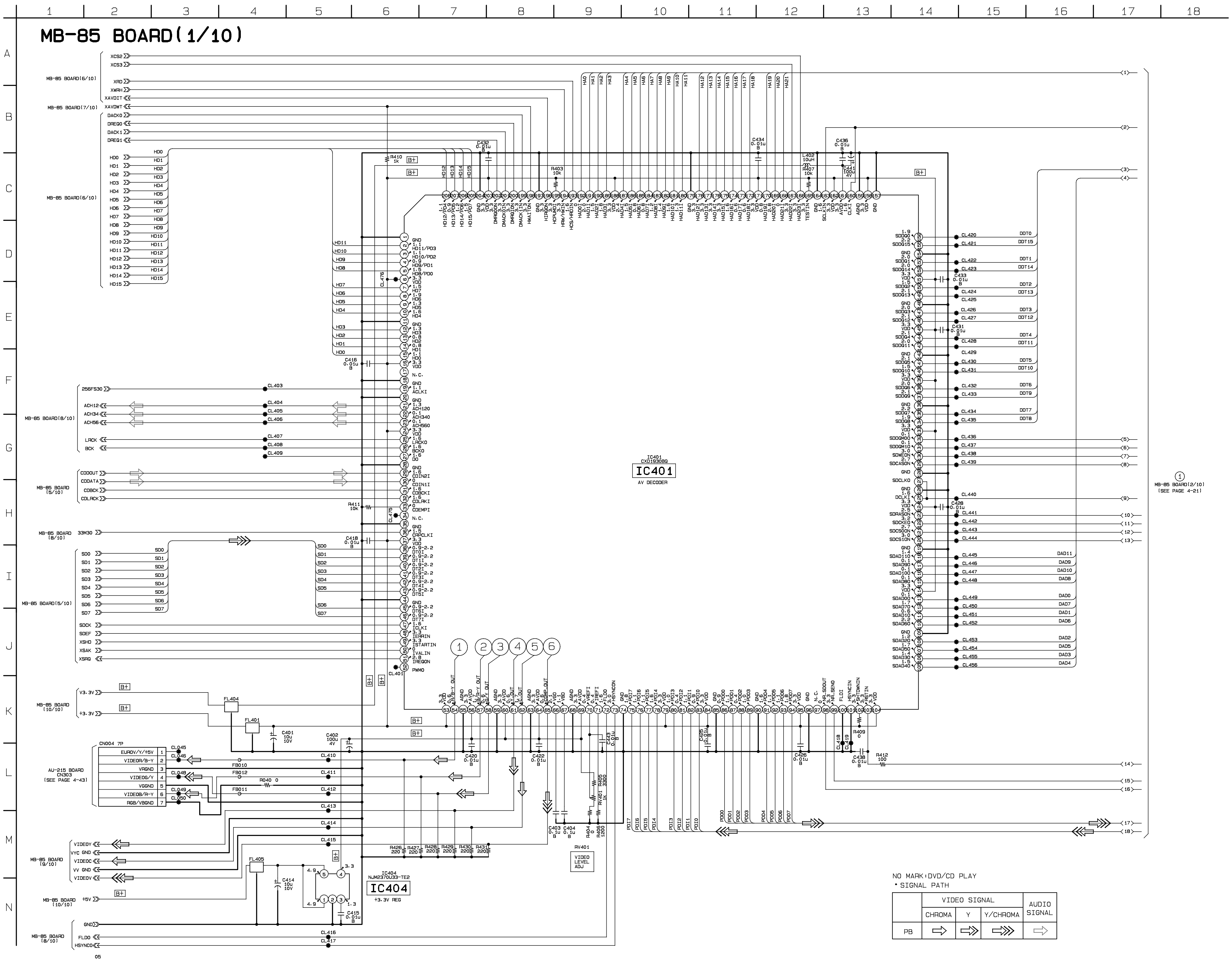


MB-85 BOARD (SIDE B)

D701	C-2
D806	C-2
IC005	A-6
IC201	A-3
IC203	A-3
IC204	B-2
IC207	A-2
IC304	C-3
IC402	C-5
IC403	C-5
IC404	D-5
IC502	C-6
IC602	A-4
IC702	B-1
IC801	C-2
IC802	C-1
IC803	C-1
IC902	A-6
IC905	B-6
IC906	B-6
IC907	C-6

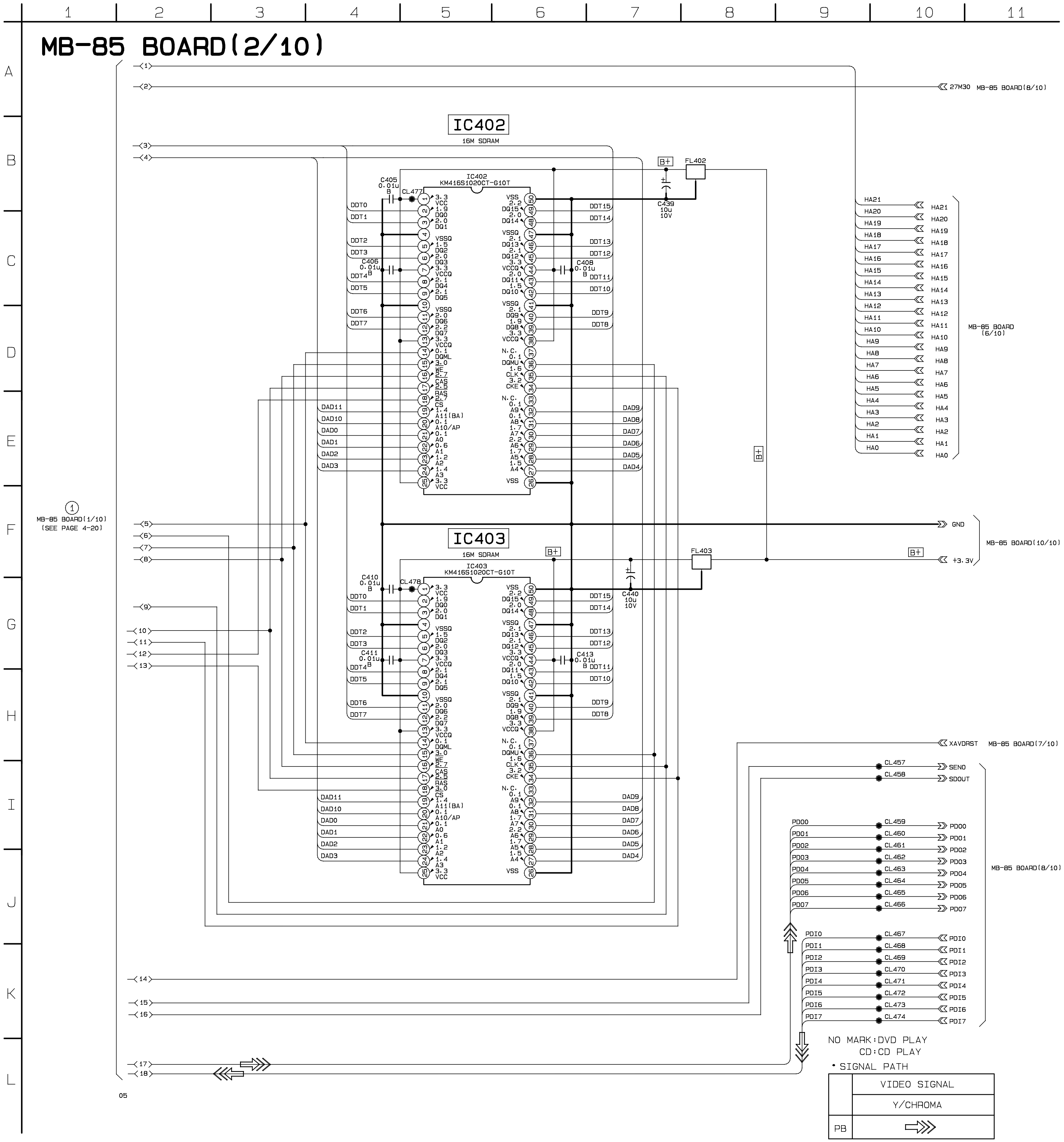
MB-85 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L M N
MB-85 BOARD(1/10)
MB-85 BOARD(6/10)
MB-85 BOARD(7/10)
MB-85 BOARD(8/10)
MB-85 BOARD (5/10)
MB-85 BOARD (8/10)
MB-85 BOARD(5/10)
MB-85 BOARD (10/10)
AU-215 BOARD CN303 (SEE PAGE 4-43)
MB-85 BOARD (9/10)
MB-85 BOARD (10/10)
MB-85 BOARD (8/10)
MB-85 BOARD(2/10) (SEE PAGE 4-21)
IC401 CXD1930BQ
IC401
AV DECODER
IC404 NJM2370U33-TE2
IC404
+3.3V REG
CN004 7P
EUROV/Y/H5V
VIDEOR/B-Y
VRGND
VIDEOG/Y
VGGND
VIDEOB/R-Y
RGB/VBGND
VIDEO LEVEL ADJ
RV401
NO MARK:DVD/CD PLAY
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB

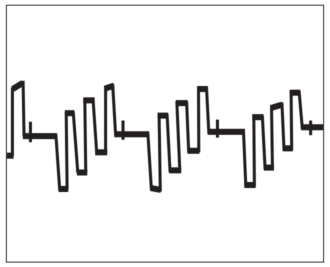
MB-85 (SDRAM) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
MB-85 BOARD(2/10)
IC402
16M SDRAM
IC402
KM416S1020CT-G10T
C405
0.01u
B
CL477
FL402
B+
C439
10u
10V
C406
0.01u
C408
0.01u
DDT0
DDT1
DDT2
DDT3
DDT4
DDT5
DDT6
DDT7
DDT8
DDT9
DDT10
DDT11
DDT12
DDT13
DDT14
DDT15
DAD0
DAD1
DAD2
DAD3
DAD4
DAD5
DAD6
DAD7
DAD8
DAD9
DAD10
DAD11
27M30
MB-85 BOARD(8/10)
HA21
HA20
HA19
HA18
HA17
HA16
HA15
HA14
HA13
HA12
HA11
HA10
HA9
HA8
HA7
HA6
HA5
HA4
HA3
HA2
HA1
HA0
MB-85 BOARD (6/10)
1
MB-85 BOARD(1/10)
(SEE PAGE 4-20)
GND
+3.3V
MB-85 BOARD(10/10)
IC403
16M SDRAM
IC403
KM416S1020CT-G10T
FL403
C410
0.01u
B
CL478
C440
10u
10V
C411
0.01u
C413
0.01u
XAVDRST
MB-85 BOARD(7/10)
CL457
CL458
SENO
SDOUT
PDO0
PDO1
PDO2
PDO3
PDO4
PDO5
PDO6
PDO7
CL459
CL460
CL461
CL462
CL463
CL464
CL465
CL466
MB-85 BOARD(8/10)
PDI0
PDI1
PDI2
PDI3
PDI4
PDI5
PDI6
PDI7
CL467
CL468
CL469
CL470
CL471
CL472
CL473
CL474
NO MARK:DVD PLAY
CD:CD PLAY
• SIGNAL PATH
VIDEO SIGNAL
Y/CHROMA
PB
05

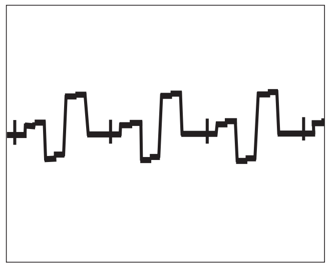
• Waveforms

❶ IC401 ㊹



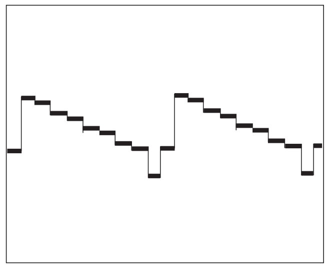
720 mVp-p (H)

❷ IC401 ㊼



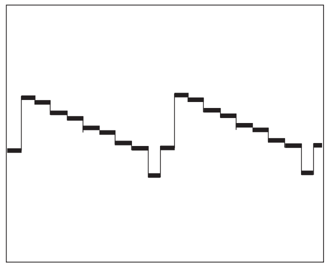
728 mVp-p (H)

❸ IC401 ㊽



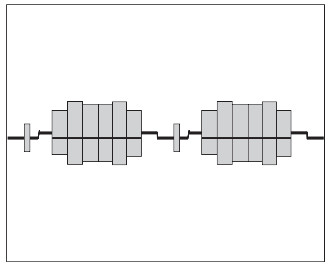
1.0 Vp-p (H)

❹ IC401 (61)



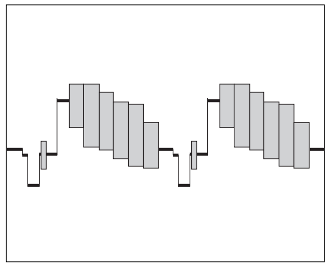
1.1 Vp-p (H)

❺ IC401 (62)



816 mVp-p (H)

❻ IC401 (65)



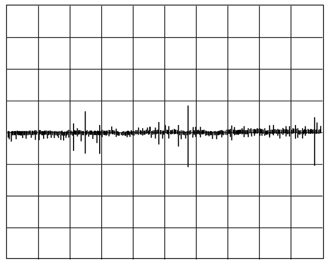
1.2 Vp-p (H)

MB-85 (SERVO DSP) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –

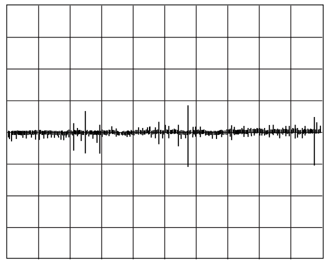
• Waveforms

❶ IC701 (69) (DVD play)
500 mV/DIV 50 ms/DIV



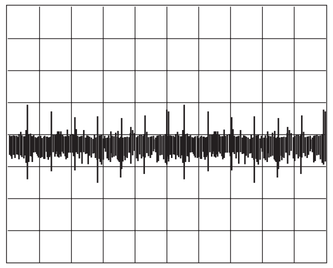
1.4 Vp-p

❷ IC701 (69) (CD play)
500 mV/DIV 200 mV/DIV



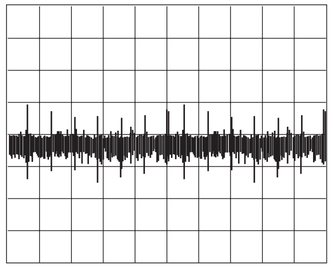
1.7 Vp-p

❸ IC701 (68) (DVD play)
100 mV/DIV 5 ms/DIV

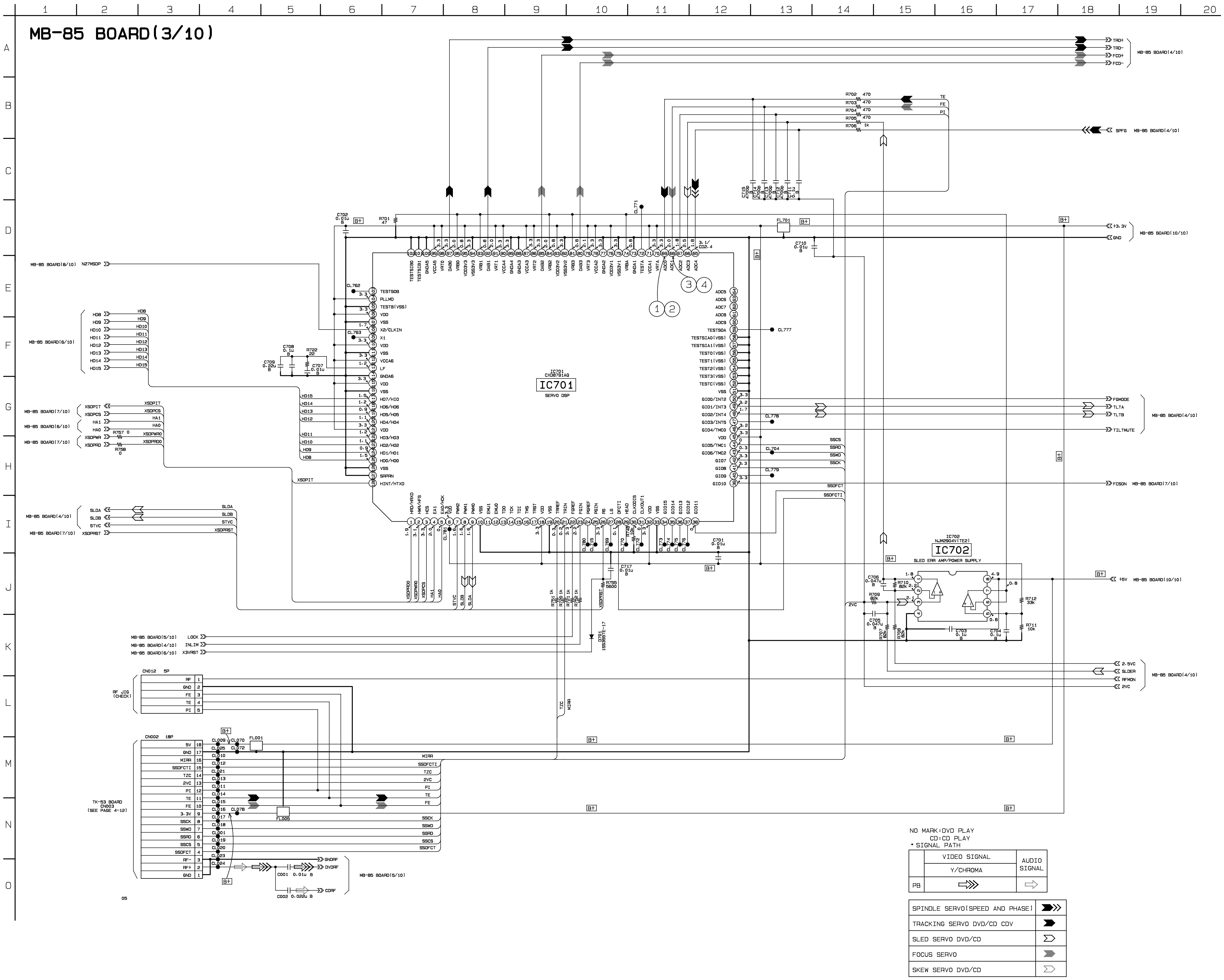


180 mVp-p

❹ IC701 (68) (CD play)
500 mV/DIV 50 ms/DIV



860 mVp-p


MB-85 BOARD(3/10)
IC701
CXD8791AQ
SERVO DSP
IC702
NJM2904V(TE2)
SLED ERR AMP/POWER SUPPLY
MB-85 BOARD(4/10)
TRD+
TRD-
FCD+
FCD-
SPFG
MB-85 BOARD(10/10)
+3.3V
GND
MB-85 BOARD(8/10)
N27MSDP
MB-85 BOARD(6/10)
HD8
HD9
HD10
HD11
HD12
HD13
HD14
HD15
MB-85 BOARD(7/10)
XSDPIT
XSDPCS
HA1
HA0
XSDPWR
XSDPRD
SLDA
SLDB
STVC
XSDPRST
FGMODE
TLTA
TLTB
TILTMUTE
FCSON
+5V
2.5VC
SLDER
RFMON
2VC
MB-85 BOARD(5/10)
LOCK
INLIM
X3VRST
CN012 5P
RF JIG (CHECK)
RF
GND
FE
TE
PI
CN002 18P
TK-53 BOARD CN003 (SEE PAGE 4-12)
5V
MIRR
SSDFCTI
TZC
2VC
SSCK
SSWD
SSRD
SSCS
SSDFCT
RF-
RF+
GNDRF
DVDRF
CDRF
D701 1SS355TE-17
1 2 3 4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

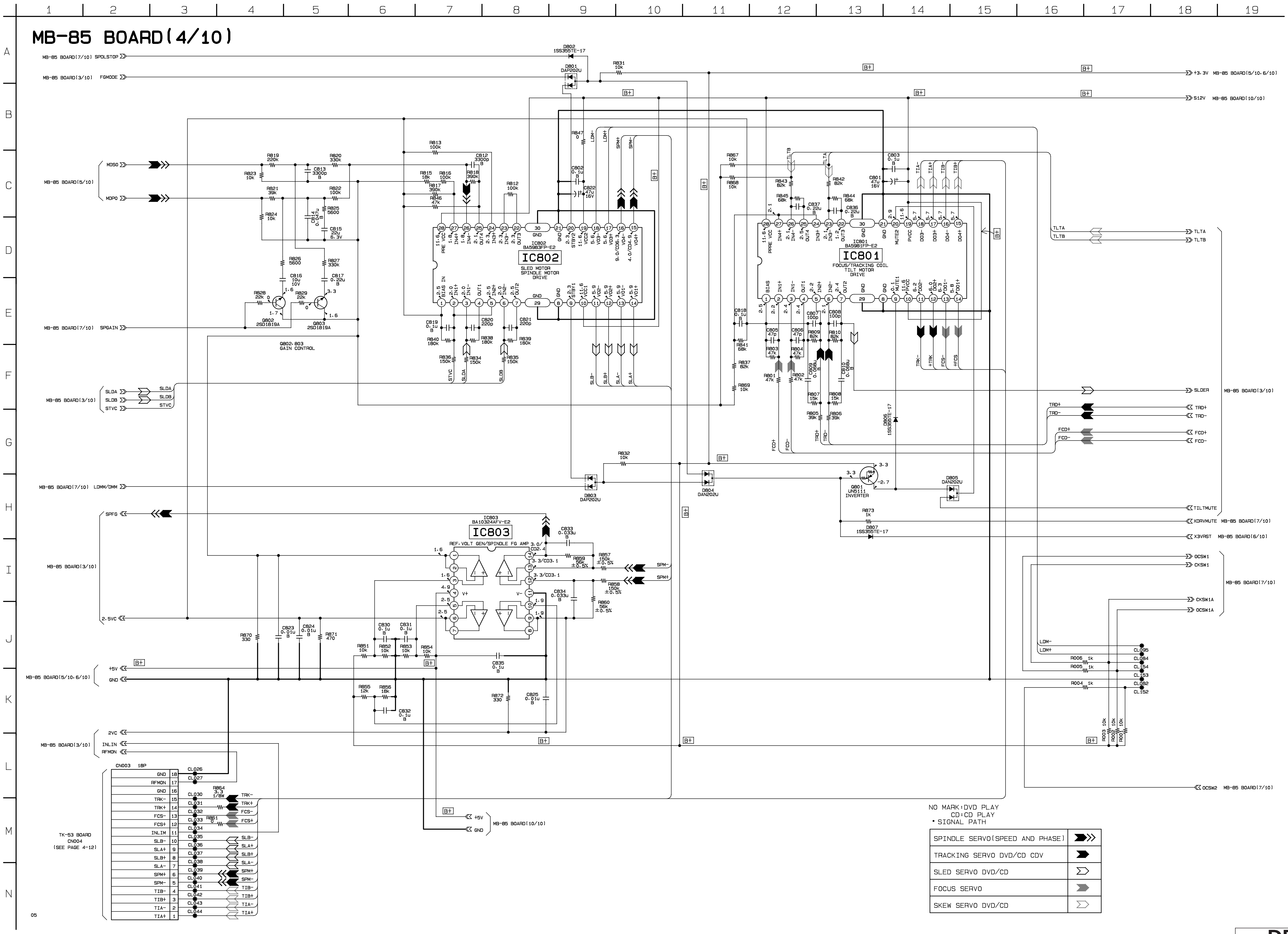
NO MARK:DVD PLAY
CD:CD PLAY
• SIGNAL PATH

	VIDEO SIGNAL	AUDIO SIGNAL
	Y/CHROMA	
PB	⇨》	⇨

SPINDLE SERVO(SPEED AND PHASE)	➤》》
TRACKING SERVO DVD/CD CDV	➤
SLED SERVO DVD/CD	▷
FOCUS SERVO	➤
SKEW SERVO DVD/CD	▷

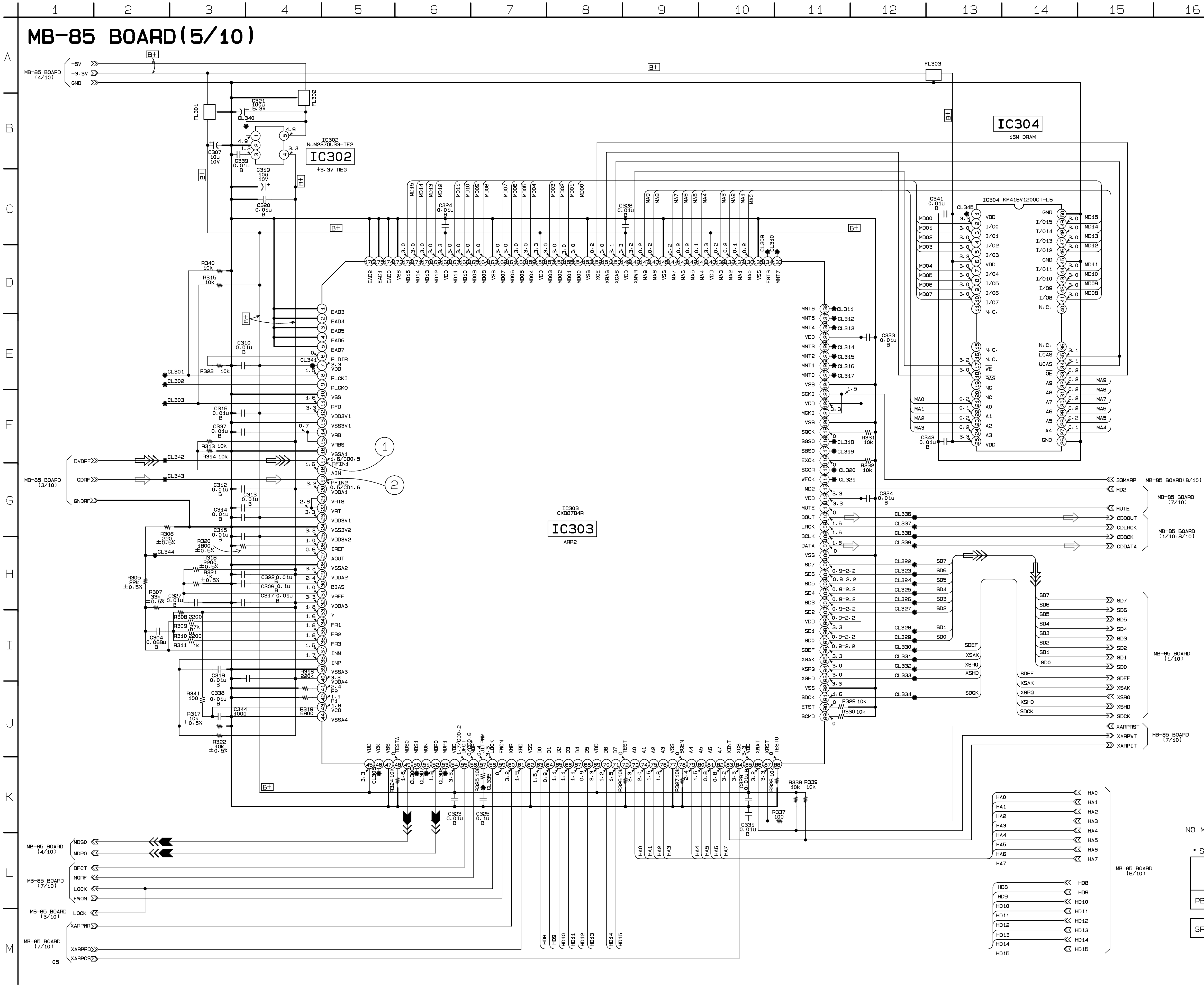
MB-85 (DRIVE) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


MB-85 BOARD(4/10)
IC802
BA5983FP-E2
SLED MOTOR
SPINDLE MOTOR
DRIVE
IC801
BA5981FP-E2
FOCUS/TRACKING COIL
TILT MOTOR
DRIVE
IC803
BA10324AFV-E2
REF. VOLT GEN/SPINDLE FG AMP
Q802, 803
GAIN CONTROL
Q802 2SD1819A
Q803 2SD1819A
Q801 UN5111 INVERTER
D801 DAP202U
D802 1SS355TE-17
D803 DAP202U
D804 DAN202U
D805 DAN202U
D806 1SS355TE-17
D807 1SS355TE-17
MB-85 BOARD(7/10) SPDLSTOP
MB-85 BOARD(3/10) FGMODE
MB-85 BOARD(5/10) MDSO MDPO
MB-85 BOARD(7/10) SPGAIN
MB-85 BOARD(3/10) SLDA SLDB STVC
MB-85 BOARD(7/10) LDMM/DMM
SPFG
MB-85 BOARD(3/10) 2.5VC
MB-85 BOARD(5/10,6/10) +5V GND
MB-85 BOARD(3/10) 2VC INLIM RFMON
+3.3V MB-85 BOARD(5/10,6/10)
S12V MB-85 BOARD(10/10)
TLTA TLTB
SLDER MB-85 BOARD(3/10)
TRD+ TRD-
FCD+ FCD-
TILTMUTE
XDRVMUTE MB-85 BOARD(7/10)
X3VRST MB-85 BOARD(6/10)
OCSW1 CKSW1 MB-85 BOARD(7/10)
CKSW1A OCSW1A
OCSW2 MB-85 BOARD(7/10)
+5V GND MB-85 BOARD(10/10)
CN003 18P
TK-53 BOARD CN004 (SEE PAGE 4-12)
GND RFMON GND TRK- TRK+ FCS- FCS+ INLIM SLB- SLA+ SLB+ SLA- SPM+ SPM- TIB- TIB+ TIA- TIA+
NO MARK:DVD PLAY
CD:CD PLAY
• SIGNAL PATH
SPINDLE SERVO(SPEED AND PHASE)
TRACKING SERVO DVD/CD CDV
SLED SERVO DVD/CD
FOCUS SERVO
SKEW SERVO DVD/CD
05

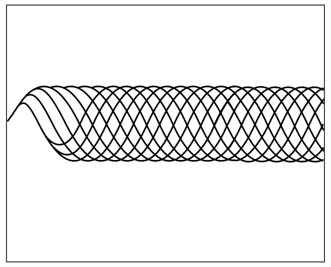
MB-85 (ARP) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


MB-85 BOARD(5/10)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L M
MB-85 BOARD (4/10)
+5V
+3.3V
GND
B+
FL301
FL302
FL303
C321 100u 6.3V
CL340
C307 10u 10V
C339 0.01u B
C319 10u 10V
C320 0.01u B
IC302 NJM2370U33-TE2
IC302
+3.3V REG
IC304
16M DRAM
IC304 KM416V1200CT-L6
C341 0.01u B
CL345
C324 0.01u B
C328 0.01u B
CL309
CL310
R340 10k
R315 10k
C310 0.01u B
CL341
CL301
CL302
CL303
R323 10k
C316 0.01u B
C337 0.01u B
R313 10k
R314 10k
DVDRF
CDRF
GNDRF
MB-85 BOARD (3/10)
CL342
CL343
C312 0.01u B
C313 0.01u B
C314 0.01u B
C315 0.01u B
R306 220 ±0.5%
R320 1800 ±0.5%
R316 2200 ±0.5%
R321 0 ±0.5%
R305 22k ±0.5%
R307 33k ±0.5%
C327 0.01u B
CL344
C322 0.01u B
C309 0.01u B
C317 0.01u B
R308 2200
R309 27k
R310 2200
R311 1k
C304 0.068u B
C318 0.01u B
R318 220k
R341 100
C338 0.01u B
R317 10k ±0.5%
C344 100p
R319 6800
R322 10k ±0.5%
IC303 CXD8784R
IC303
ARP2
C333 0.01u B
R331 10k
R332 10k
C334 0.01u B
CL311 CL312 CL313 CL314 CL315 CL316 CL317 CL318 CL319 CL320 CL321
CL322 CL323 CL324 CL325 CL326 CL327 CL328 CL329 CL330 CL331 CL332 CL333 CL334
CL336 CL337 CL338 CL339
R329 10k
R330 10k
C343 0.01u B
33MARP
MB-85 BOARD(8/10)
MD2
MB-85 BOARD (7/10)
MUTE
CDDOUT
CDLRCK
CDBCK
CDDATA
MB-85 BOARD (1/10,8/10)
SD7 SD6 SD5 SD4 SD3 SD2 SD1 SD0
SDEF XSAK XSRQ XSHD SDCK
MB-85 BOARD (1/10)
XARPRST
XARPWT
XARPIT
MB-85 BOARD (7/10)
HA0 HA1 HA2 HA3 HA4 HA5 HA6 HA7
HD8 HD9 HD10 HD11 HD12 HD13 HD14 HD15
MB-85 BOARD (6/10)
C323 0.01u B
C325 0.1u B
C331 0.01u B
R337 100
R338 10k
R339 10k
R324 10k
R325 10k
R326 10k
R327 10k
R328 10k
MB-85 BOARD (4/10)
MDSO
MDPO
MB-85 BOARD (7/10)
DFCT
NORF
LOCK
FWON
MB-85 BOARD (3/10)
LOCK
XARPWR
MB-85 BOARD (7/10)
XARPRD
XARPCS
05
1
2

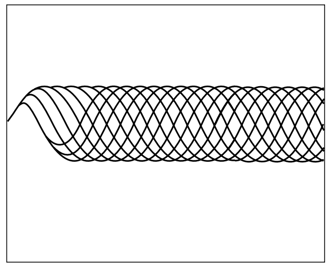
• Waveforms

❶ IC303 ⑰ (DVD play)
500 mV/DIV 100 ns/DIV



1.6 Vp-p

❷ IC303 ⑲ (CD play)
500 mV/DIV 200 ns/DIV



1.6 Vp-p

NO MARK: DVD PLAY
CD: CD PLAY

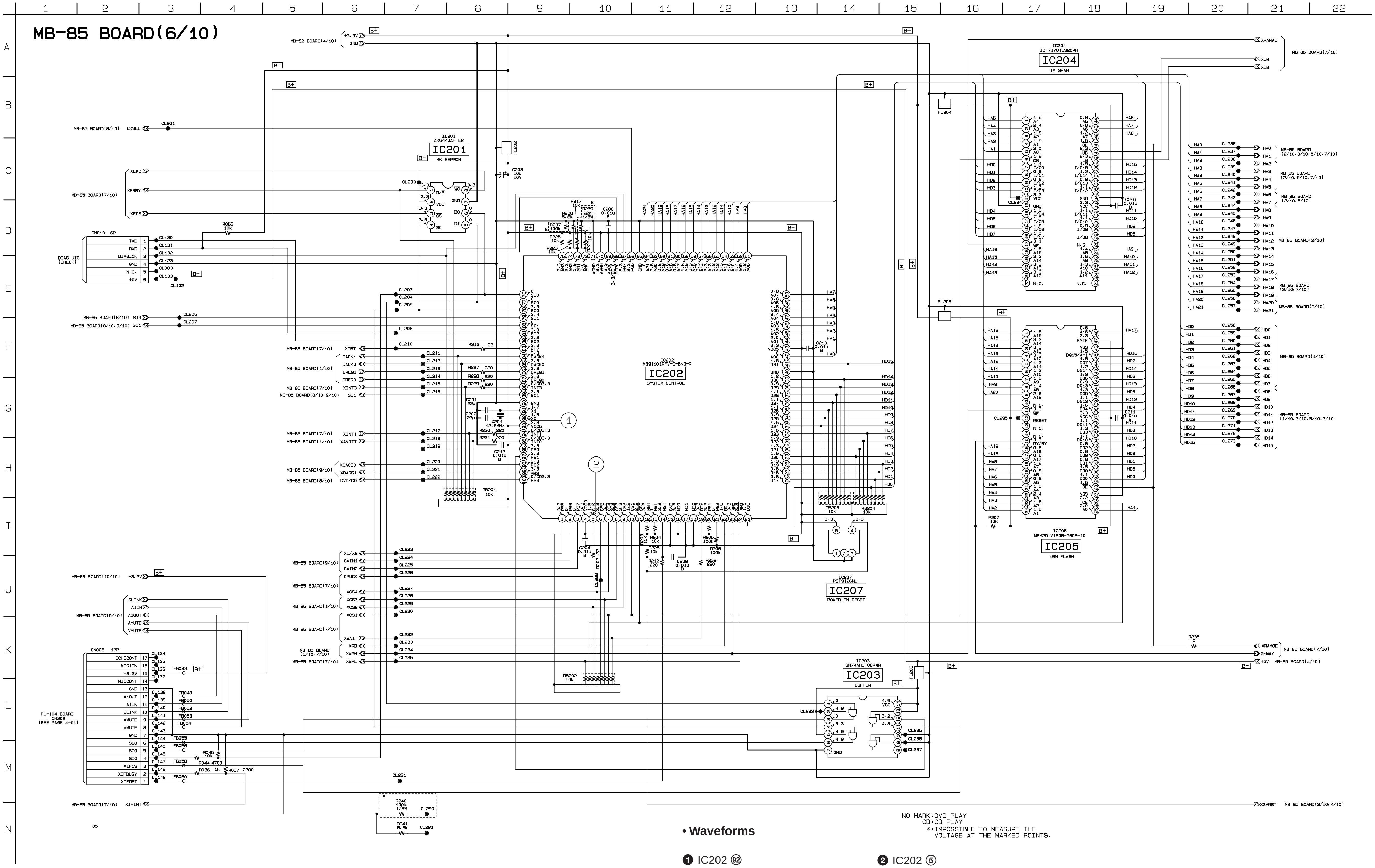
• SIGNAL PATH

	VIDEO SIGNAL	AUDIO SIGNAL
	Y/CHROMA	
PB	⇛	⇨

SPINDLE SERVO(SPEED AND PHASE)	➤»

MB-85 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

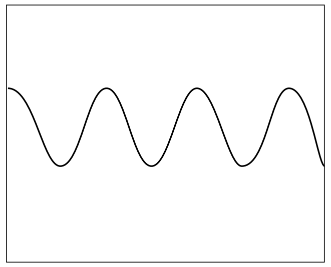
– Ref. No.: MB-85 board; 1,000 series –


MB-85 BOARD(6/10)
IC201
AK6440AF-E2
IC201
4K EEPROM
IC202
MB91101PFV-G-BND-R
IC202
SYSTEM CONTROL
IC203
SN74AHCT08PWR
IC203
BUFFER
IC204
IDT71V016S20PH
IC204
1M SRAM
IC205
MBM29LV160B-260B-10
IC205
16M FLASH
IC207
PST9126NL
IC207
POWER ON RESET
X201
12.5MHz
CN010 6P
DIAG JIG (CHECK)
CN006 17P
FL-104 BOARD CN202 (SEE PAGE 4-51)
MB-82 BOARD(4/10)
MB-85 BOARD(7/10)
MB-85 BOARD(8/10)
MB-85 BOARD(1/10)
MB-85 BOARD(9/10)
MB-85 BOARD(10/10)
MB-85 BOARD(2/10)
MB-85 BOARD(3/10,4/10)
FL202
FL203
FL204
FL205
RB201 10k
RB202 10k
RB203 10k
RB204 10k
B+
1
2

NO MARK:DVD PLAY
CD:CD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

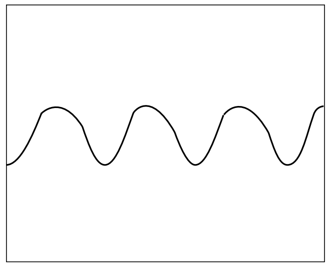
• Waveforms

❶ IC202 (92)



2.4 Vp-p (12.5 MHz)

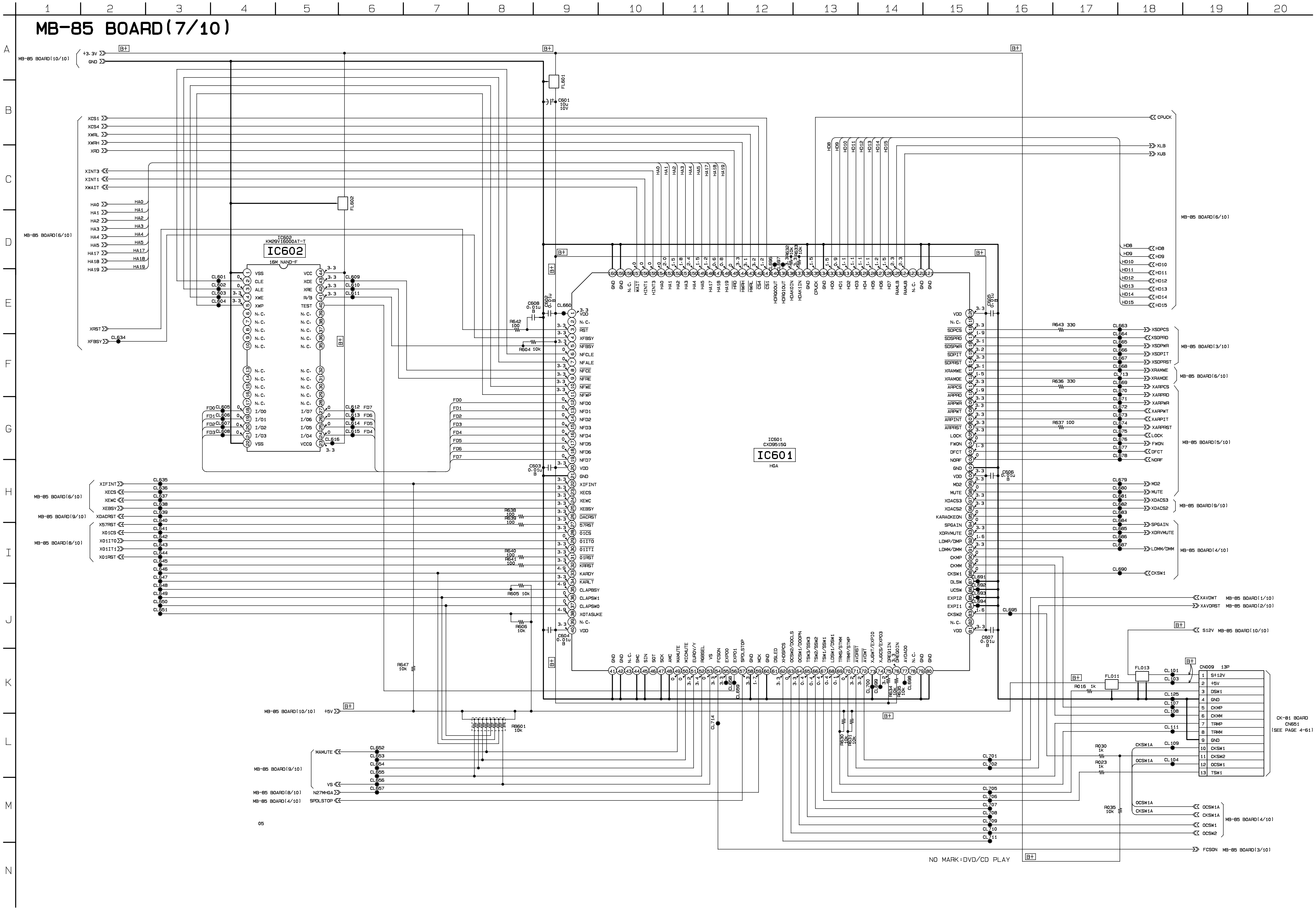
❷ IC202 ⑤



4 Vp-p (25.3 MHz)

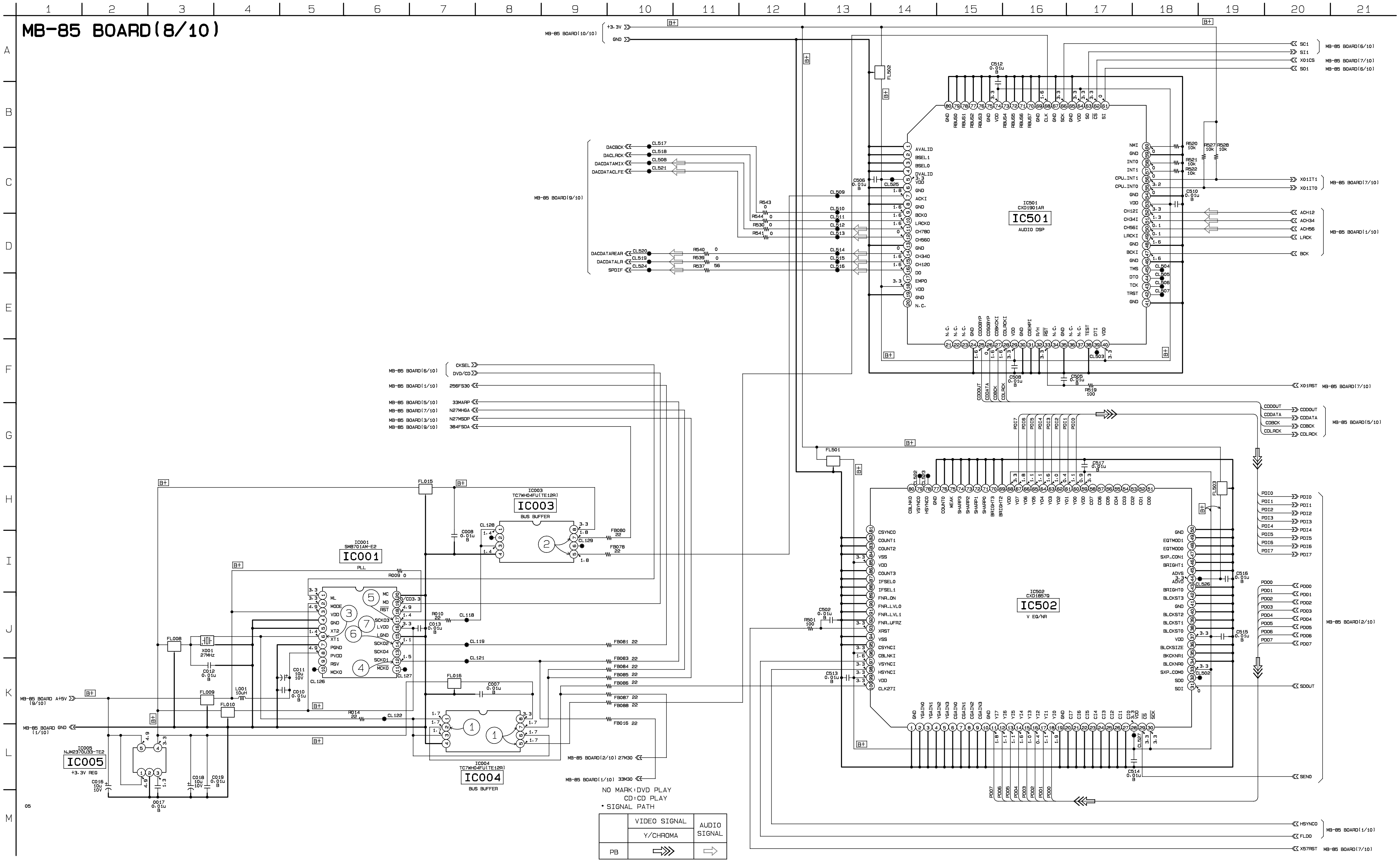
MB-85 (HGA) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


MB-85 BOARD(7/10)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
N
MB-85 BOARD(10/10)
+3.3V
GND
B+
FL601
C601 10u 10V
XCS1
XCS4
XWRL
XWRH
XRD
XINT3
XINT1
XWAIT
HA0
HA1
HA2
HA3
HA4
HA5
HA17
HA18
HA19
MB-85 BOARD(6/10)
FL602
IC602 KM29V16000AT-T
IC602
16M NAND-F
XRST
XFBSY
CL634
FD0
FD1
FD2
FD3
FD4
FD5
FD6
FD7
IC601 CXD9515Q
IC601
HGA
CPUCK
XLB
XUB
HD8
HD9
HD10
HD11
HD12
HD13
HD14
HD15
XSDPCS
XSDPRD
XSDPWR
XSDPIT
XSDPRST
MB-85 BOARD(3/10)
XRAMWE
XRAMOE
XARPCS
XARPRD
XARPWR
XARPWT
XARPIT
XARPRST
LOCK
FWON
DFCT
NDRF
MB-85 BOARD(5/10)
MD2
MUTE
XDACS3
XDACS2
MB-85 BOARD(9/10)
SPGAIN
XDRVMUTE
LDMM/DMP
MB-85 BOARD(4/10)
CKSW1
XIFINT
XECS
XEWC
XEBSY
XDACRST
X57RST
X01CS
X01ITO
X01IT1
X01RST
MB-85 BOARD(8/10)
XAVDWT MB-85 BOARD(1/10)
XAVDRST MB-85 BOARD(2/10)
S12V MB-85 BOARD(10/10)
MB-85 BOARD(10/10) +5V
MAMUTE
VS
N27MHGA
SPDLSTOP
CN009 13P
1 S+12V
2 +5V
3 DSW1
4 GND
5 CKMP
6 CKMM
7 TRMP
8 TRMM
9 GND
10 CKSW1
11 CKSW2
12 OCSW1
13 TSW1
CK-81 BOARD CN651 (SEE PAGE 4-61)
FL011
FL013
OCSW1A
CKSW1A
OCSW1
OCSW2
FCSON MB-85 BOARD(3/10)
NO MARK:DVD/CD PLAY
05

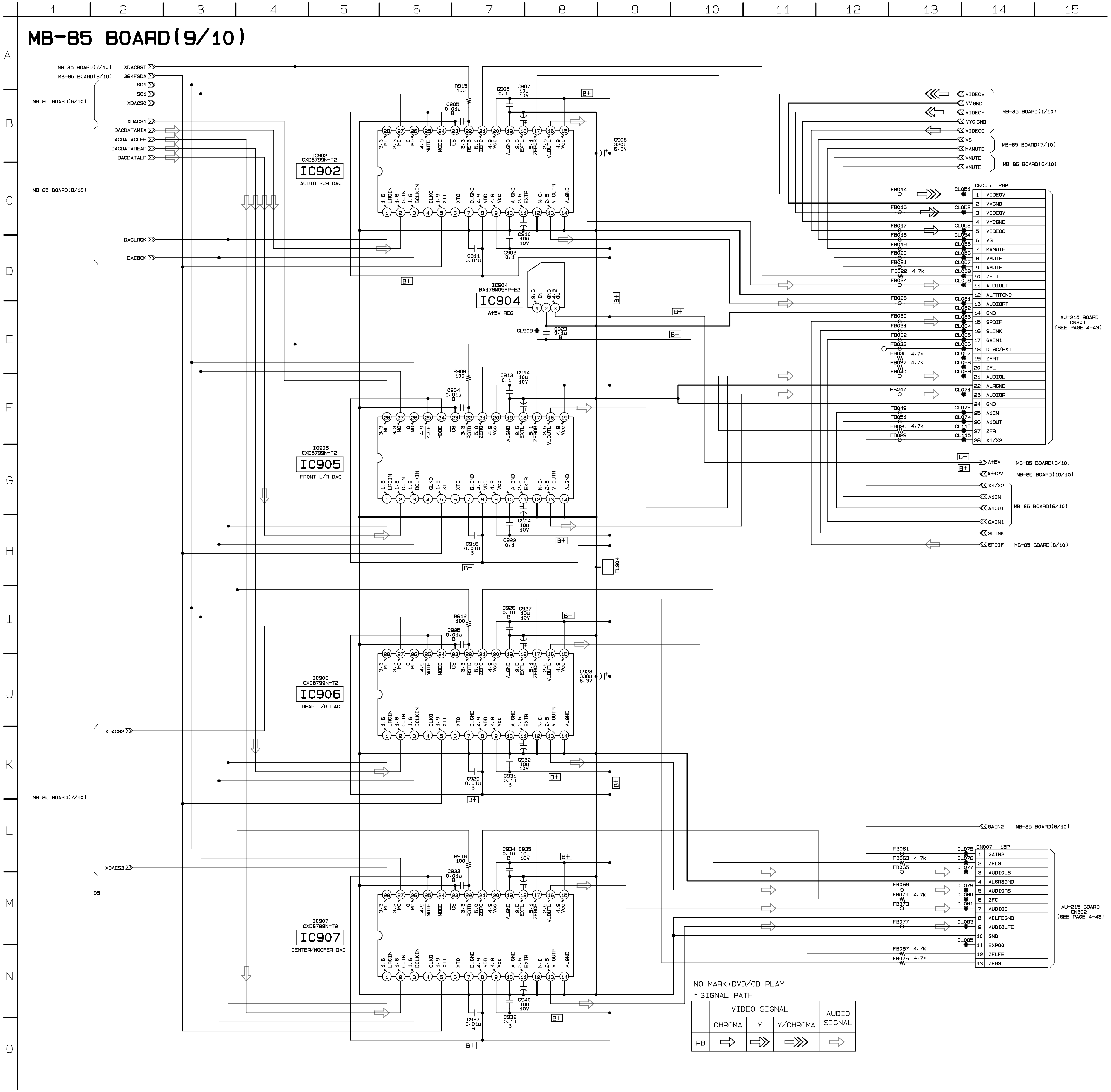
MB-85 (CLOCK GENERATOR/AUDIO DSP/V EQ/NR) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board and page 4-38 for waveforms.

– Ref. No.: MB-85 board; 1,000 series –


MB-85 BOARD(8/10)
IC001 SM8701AM-E2 PLL
IC003 TC7WH04FU(TE12R) BUS BUFFER
IC004 TC7WH04FU(TE12R) BUS BUFFER
IC005 NJM2370U33-TE2 +3.3V REG
IC501 CXD1901AR AUDIO DSP
IC502 CXD1857Q V EQ/NR
X001 27MHz
MB-85 BOARD(10/10)
MB-85 BOARD(9/10)
MB-85 BOARD(6/10)
MB-85 BOARD(7/10)
MB-85 BOARD(1/10)
MB-85 BOARD(5/10)
MB-85 BOARD(3/10)
MB-85 BOARD(2/10)
MB-85 BOARD A+5V (9/10)
MB-85 BOARD GND (1/10)
NO MARK:DVD PLAY
CD:CD PLAY
* SIGNAL PATH
VIDEO SIGNAL
Y/CHROMA
AUDIO SIGNAL
PB

MB-85 (DAC) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

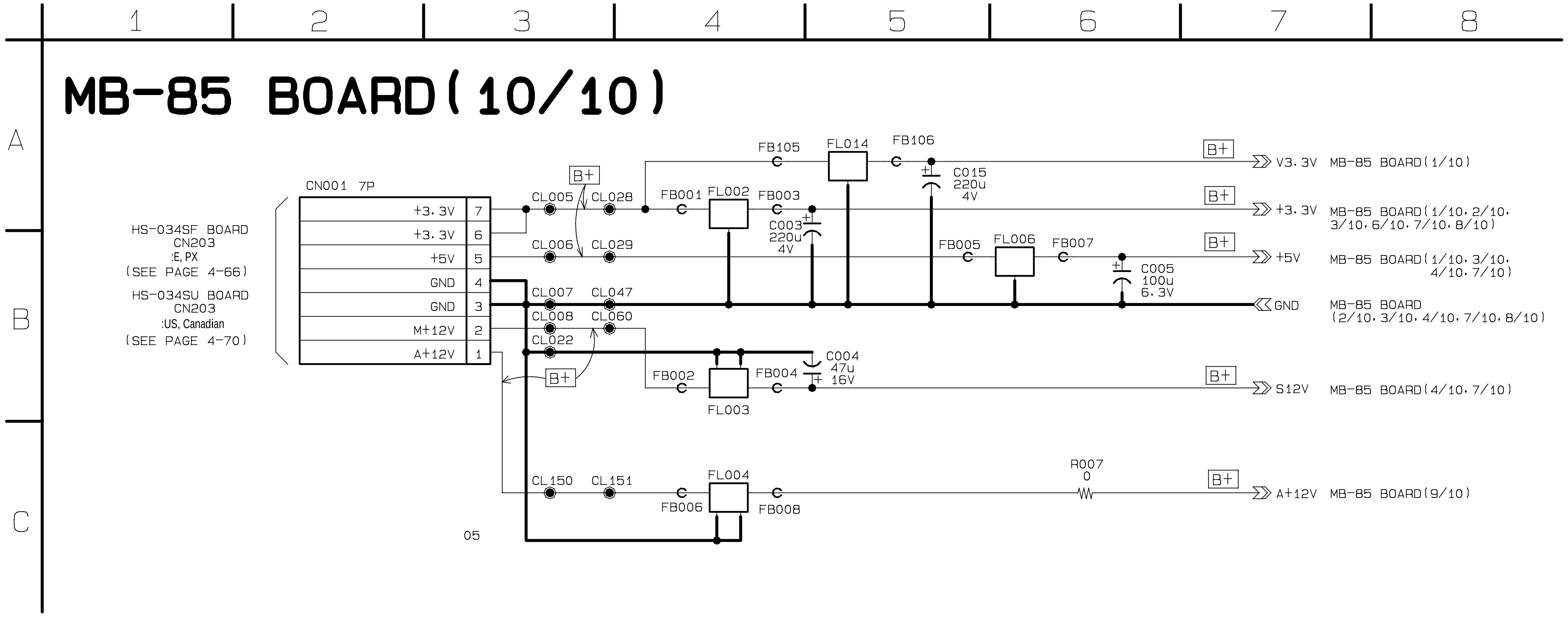
– Ref. No.: MB-85 board; 1,000 series –


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K L M N O
MB-85 BOARD(9/10)
MB-85 BOARD(7/10) XDACRST
MB-85 BOARD(8/10) 384FSDA
SO1
SC1
MB-85 BOARD(6/10) XDACS0
XDACS1
DACDATAMIX
DACDATACLFE
DACDATAREAR
DACDATALR
MB-85 BOARD(8/10)
DACLRCK
DACBCK
IC902 CXD8799N-T2 IC902 AUDIO 2CH DAC
3.3 ML
3.3 MC
0 MD
4.9 MUTE
MODE
CS
3.3 RSTB
5.0 ZEROL
4.9 Vcc
A_GND
2.5 EXTL
5.1 ZEROR
2.5 V_OUTL
4.9 Vcc
1.6 LRCIN
1.6 D_IN
1.6 BCLKIN
CLKO
1.9 XTI
XTO
D_GND
4.9 VDD
4.9 Vcc
A_GND
2.5 EXTR
N.C.
2.5 V_OUTR
A_GND
R915 100
C905 0.01u B
C906 0.1
C907 10u 10V
C908 330u 6.3V
C910 10u 10V
C911 0.01u
C909 0.1
B+
IC904 BA178M05FP-E2 IC904 A+5V REG
9.6 IN
GND
4.9 OUT
CL909
C923 0.1u B
R909 100
C904 0.01u B
C913 0.1
C914 10u 10V
IC905 CXD8799N-T2 IC905 FRONT L/R DAC
C924 10u 10V
C916 0.01u B
C922 0.1
FL904
R912 100
C925 0.01u B
C926 0.1u B
C927 10u 10V
C928 330u 6.3V
IC906 CXD8799N-T2 IC906 REAR L/R DAC
C932 10u 10V
C929 0.01u B
C931 0.1u B
XDACS2
MB-85 BOARD(7/10)
XDACS3
05
R918 100
C933 0.01u B
C934 0.1u B
C935 10u 10V
IC907 CXD8799N-T2 IC907 CENTER/WOOFER DAC
C940 10u 10V
C937 0.01u B
C939 0.1u B
VIDEOV
VVGND
VIDEOY
VYC GND
VIDEOC
MB-85 BOARD(1/10)
VS
MAMUTE
MB-85 BOARD(7/10)
VMUTE
AMUTE
MB-85 BOARD(6/10)
CN005 28P
FB014 CL051 1 VIDEOV
2 VVGND
FB015 CL052 3 VIDEOY
4 VYCGND
FB017 CL053 5 VIDEOC
FB018 CL054 6 VS
FB019 CL055 7 MAMUTE
FB020 CL056 8 VMUTE
FB021 CL057 9 AMUTE
FB022 4.7k CL058 10 ZFLT
FB024 CL059 11 AUDIOLT
12 ALTRTGND
FB028 CL061 13 AUDIORT
CL062 14 GND
FB030 CL063 15 SPDIF
FB031 CL064 16 SLINK
FB032 CL065 17 GAIN1
FB033 CL066 18 DISC/EXT
FB035 4.7k CL067 19 ZFRT
FB037 4.7k CL068 20 ZFL
FB040 CL069 21 AUDIOL
22 ALRGND
FB047 CL071 23 AUDIOR
24 GND
FB049 CL073 25 A1IN
FB051 CL074 26 A1OUT
FB026 4.7k CL116 27 ZFR
FB029 CL115 28 X1/X2
AU-215 BOARD CN301 (SEE PAGE 4-43)
A+5V MB-85 BOARD(8/10)
A+12V MB-85 BOARD(10/10)
X1/X2
A1IN
A1OUT
GAIN1
MB-85 BOARD(6/10)
SLINK
SPDIF MB-85 BOARD(8/10)
GAIN2 MB-85 BOARD(6/10)
CN007 13P
FB061 CL075 1 GAIN2
FB063 4.7k CL076 2 ZFLS
FB065 CL077 3 AUDIOLS
4 ALSRSGND
FB069 CL079 5 AUDIORS
FB071 4.7k CL080 6 ZFC
FB073 CL081 7 AUDIOC
8 ACLFEGND
FB077 CL083 9 AUDIOLFE
10 GND
CL085 11 EXPOO
FB067 4.7k 12 ZFLFE
FB075 4.7k 13 ZFRS
AU-215 BOARD CN302 (SEE PAGE 4-43)
NO MARK:DVD/CD PLAY
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB

DAC
MB-85 (9/10)

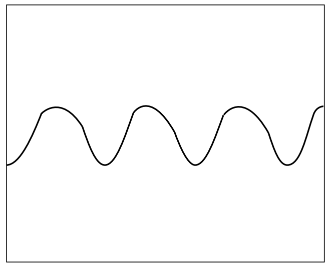
MB-85 (BIAS) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-85 board; 1,000 series –


1
2
3
4
5
6
7
8
A
B
C
MB-85 BOARD(10/10)
HS-034SF BOARD
CN203
:E, PX
(SEE PAGE 4-66)
HS-034SU BOARD
CN203
:US, Canadian
(SEE PAGE 4-70)
CN001 7P
+3.3V 7
+3.3V 6
+5V 5
GND 4
GND 3
M+12V 2
A+12V 1
CL005
CL028
CL006
CL029
CL007
CL047
CL008
CL060
CL022
CL150
CL151
B+
FB105
FL014
FB106
C015
220u
4V
FB001
FL002
FB003
C003
220u
4V
FB005
FL006
FB007
C005
100u
6.3V
FB002
FL003
FB004
C004
47u
16V
FL004
FB006
FB008
R007
0
05
V3.3V
MB-85 BOARD(1/10)
+3.3V
MB-85 BOARD(1/10,2/10,
3/10,6/10,7/10,8/10)
+5V
MB-85 BOARD(1/10,3/10,
4/10,7/10)
GND
MB-85 BOARD
(2/10,3/10,4/10,7/10,8/10)
S12V
MB-85 BOARD(4/10,7/10)
A+12V
MB-85 BOARD(9/10)

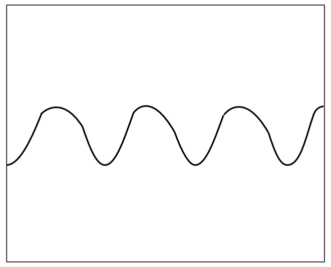
• Waveforms

❶ IC004 ②, ⑤, ⑦



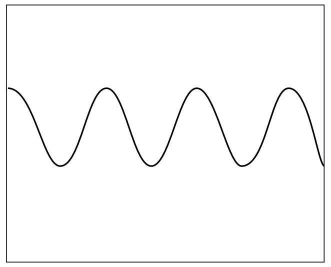
4.2 Vp-p (26.9 MHz)

❷ IC003 ⑤, ⑦



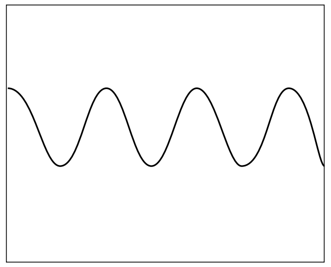
DVD: 6.2 Vp-p (37.0 MHz)
CD : 5 Vp-p (33.6 MHz)

❸ IC001 ⑥



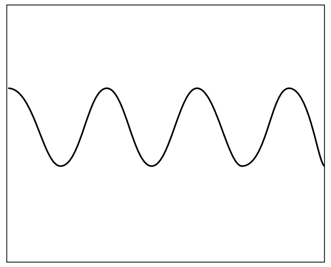
4.2 Vp-p (27.0 MHz)

❹ IC001 ⑫



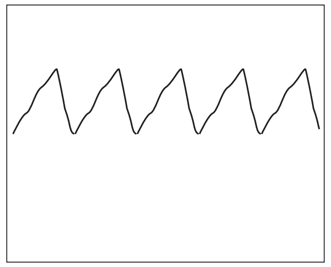
4.6 Vp-p (33.8 MHz)

❺ IC001 ⑰



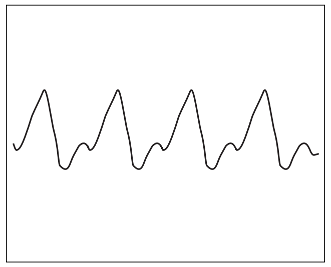
DVD: 5.8 Vp-p (36.5 MHz)
CD : 5.1 Vp-p (33.8 MHz)

❻ IC001 ⑭ (DVD play)



4.2 Vp-p (25.3 MHz)

❼ IC001 ⑭ (CD play)

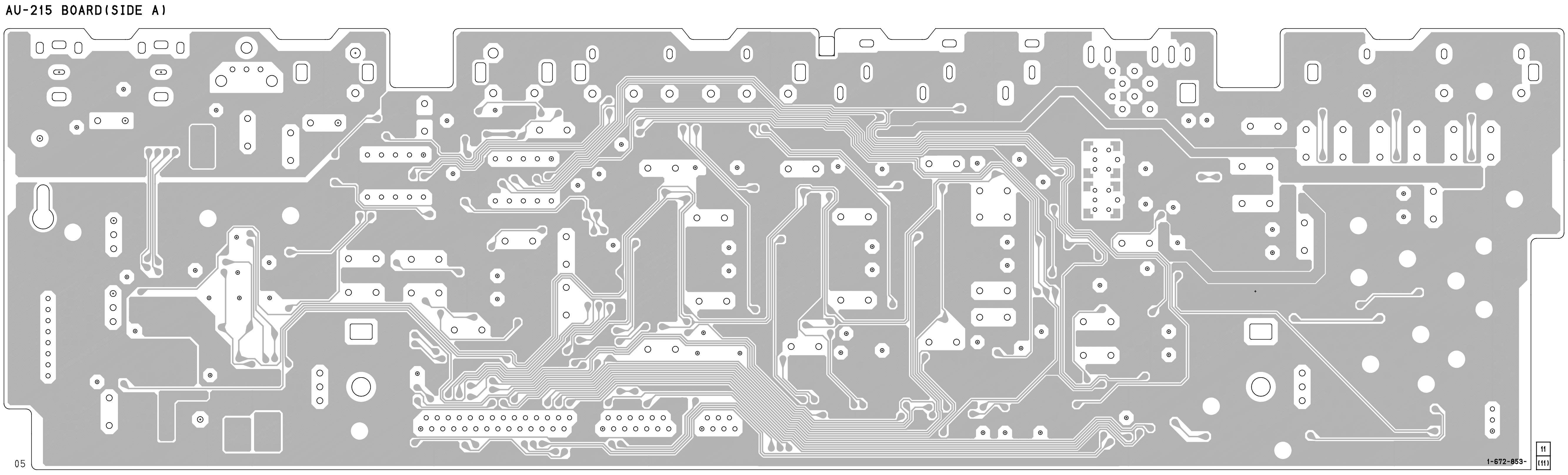


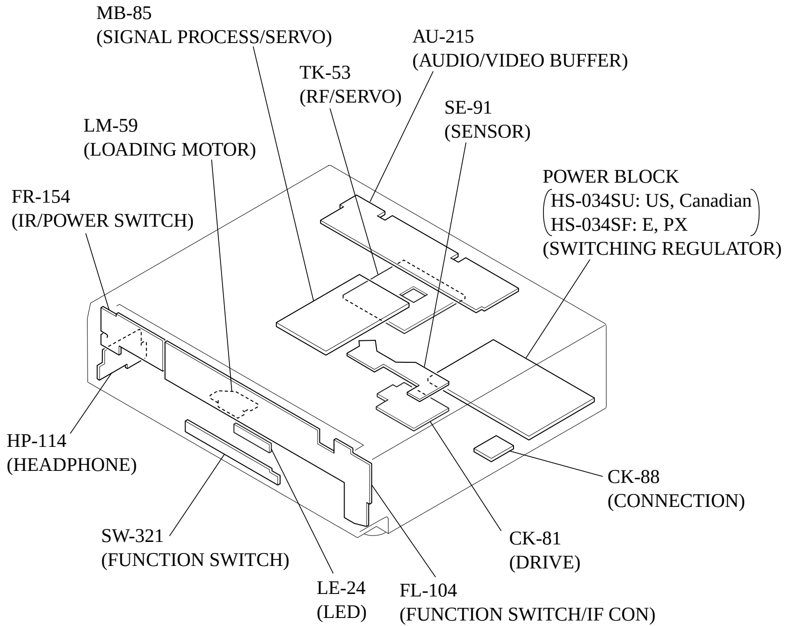
4.7 Vp-p (22.5 MHz)

AU-215 (AUDIO/VIDEO BUFFER) PRINTED WIRING BOARD

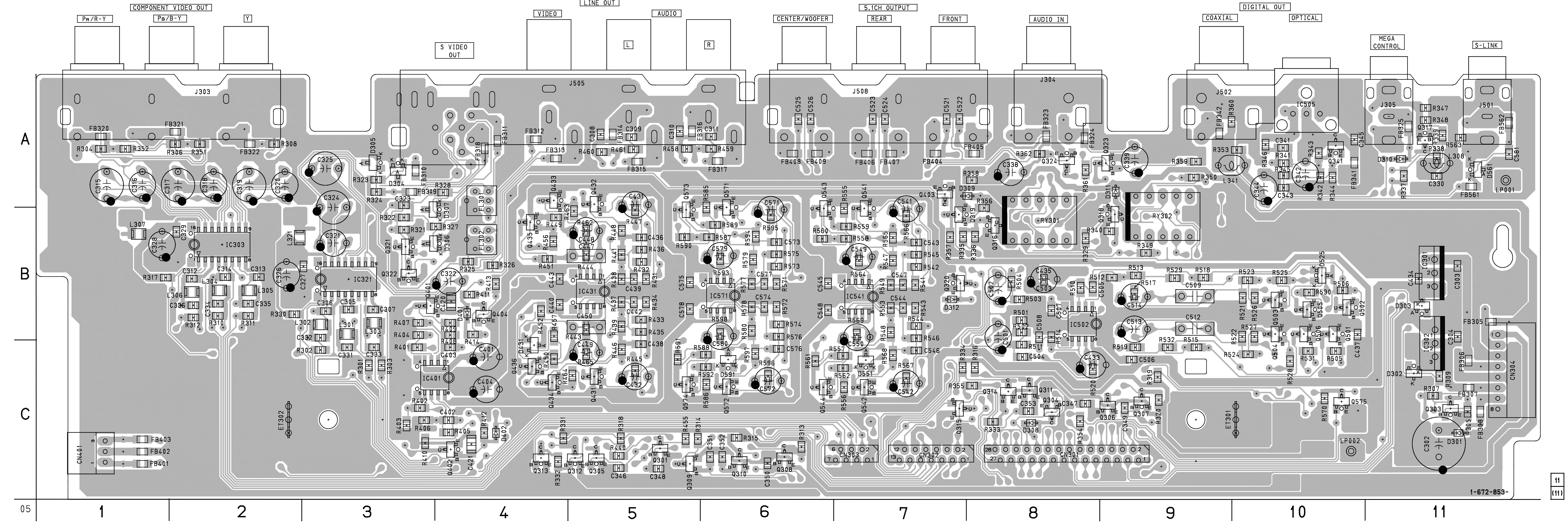
– Ref. No.: AU-215 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.


AU-215 BOARD(SIDE A)
05
1-672-853-
11
(11)


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

AU-215 BOARD(SIDE B)


COMPONENT VIDEO OUT
PB/R-Y
PB/B-Y
Y
S VIDEO OUT
LINE OUT
VIDEO
AUDIO
L
R
5.1CH OUTPUT
CENTER/WOOFER
REAR
FRONT
AUDIO IN
DIGITAL OUT
COAXIAL
OPTICAL
MEGA CONTROL
S-LINK
J303
J505
J508
J304
J502
J305
J501
IC303
IC321
IC401
IC431
IC571
IC541
IC502
IC505
IC301
IC302
RY301
RY302
CN401
CN303
CN302
CN301
CN304
ET302
ET301
LP001
LP002
A
B
C
05
1
2
3
4
5
6
7
8
9
10
11
1-672-853-
11
(11)

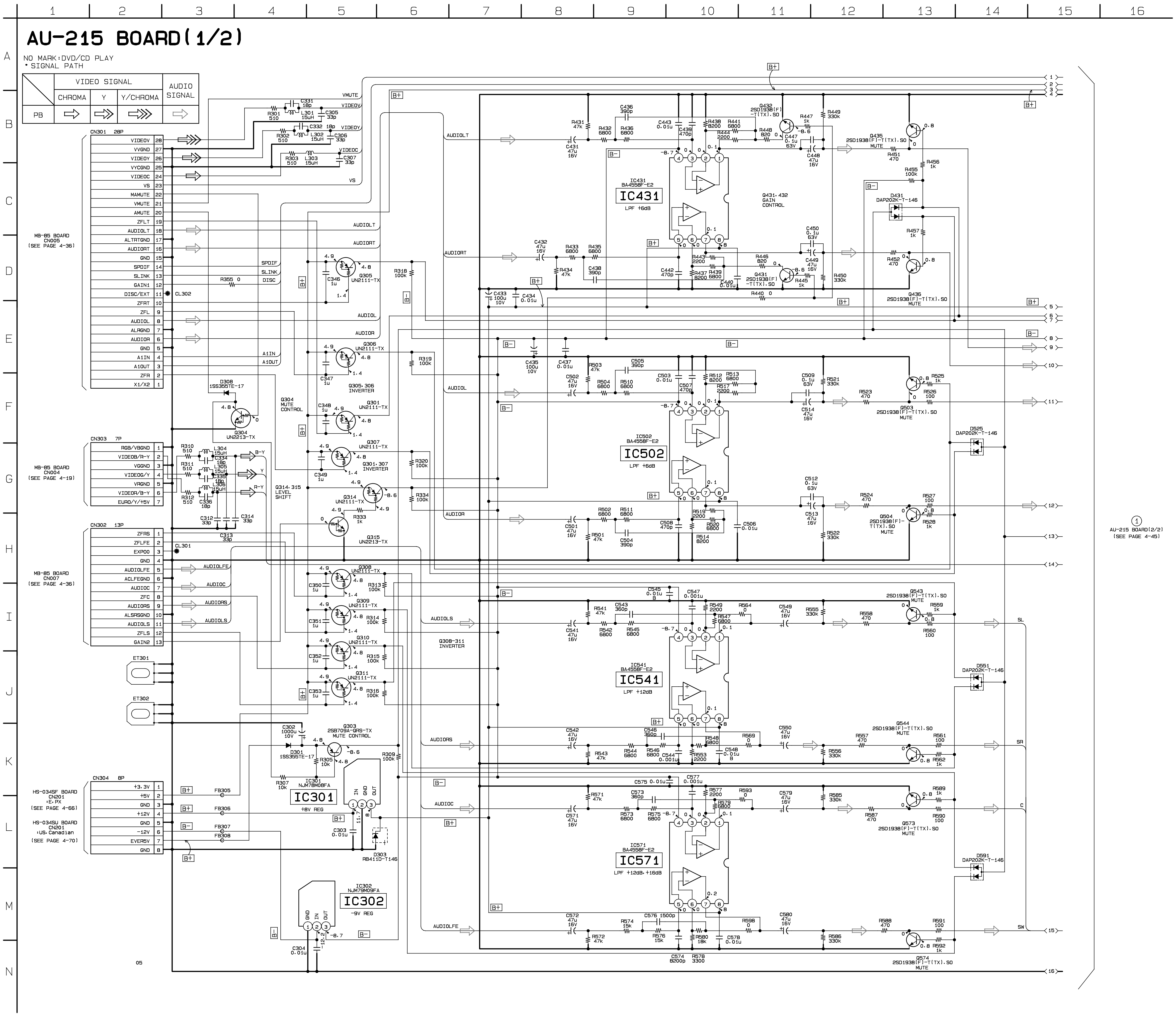
AU-215 BOARD (SIDE B)

CN301	C-8	Q301	C-5
CN302	C-7	Q303	C-11
CN303	C-7	Q304	C-8
CN304	C-11	Q305	C-5
CN401	C-1	Q306	C-9
		Q307	C-9
D301	C-11	Q308	C-6
D303	B-11	Q309	C-5
D304	A-3	Q310	C-6
D305	A-3	Q311	C-8
D306	B-4	Q314	C-8
D307	B-3	Q315	C-7
D308	C-8	Q316	B-8
D309	A-8	Q317	A-11
D310	A-11	Q318	B-9
D311	A-9	Q319	B-7
D312	B-7	Q320	B-7
D401	B-4	Q321	B-3
D402	C-4	Q322	B-3
D431	C-4	Q323	A-9
D525	B-10	Q324	A-8
D551	C-7	Q341	A-10
D561	A-11	Q401	B-3
D591	C-6	Q402	C-4
		Q403	A-7
IC301	B-11	Q404	B-4
IC302	C-11	Q431	C-5
IC303	B-2	Q432	A-5
IC321	B-3	Q435	B-4
IC401	C-3	Q436	C-4
IC431	B-5	Q503	B-10
IC502	B-8	Q504	B-10
IC505	A-10	Q543	A-6
IC541	B-7	Q544	C-6
IC571	B-6	Q573	B-5
		Q574	C-5

AUDIO/VIDEO BUFFER
AU-215

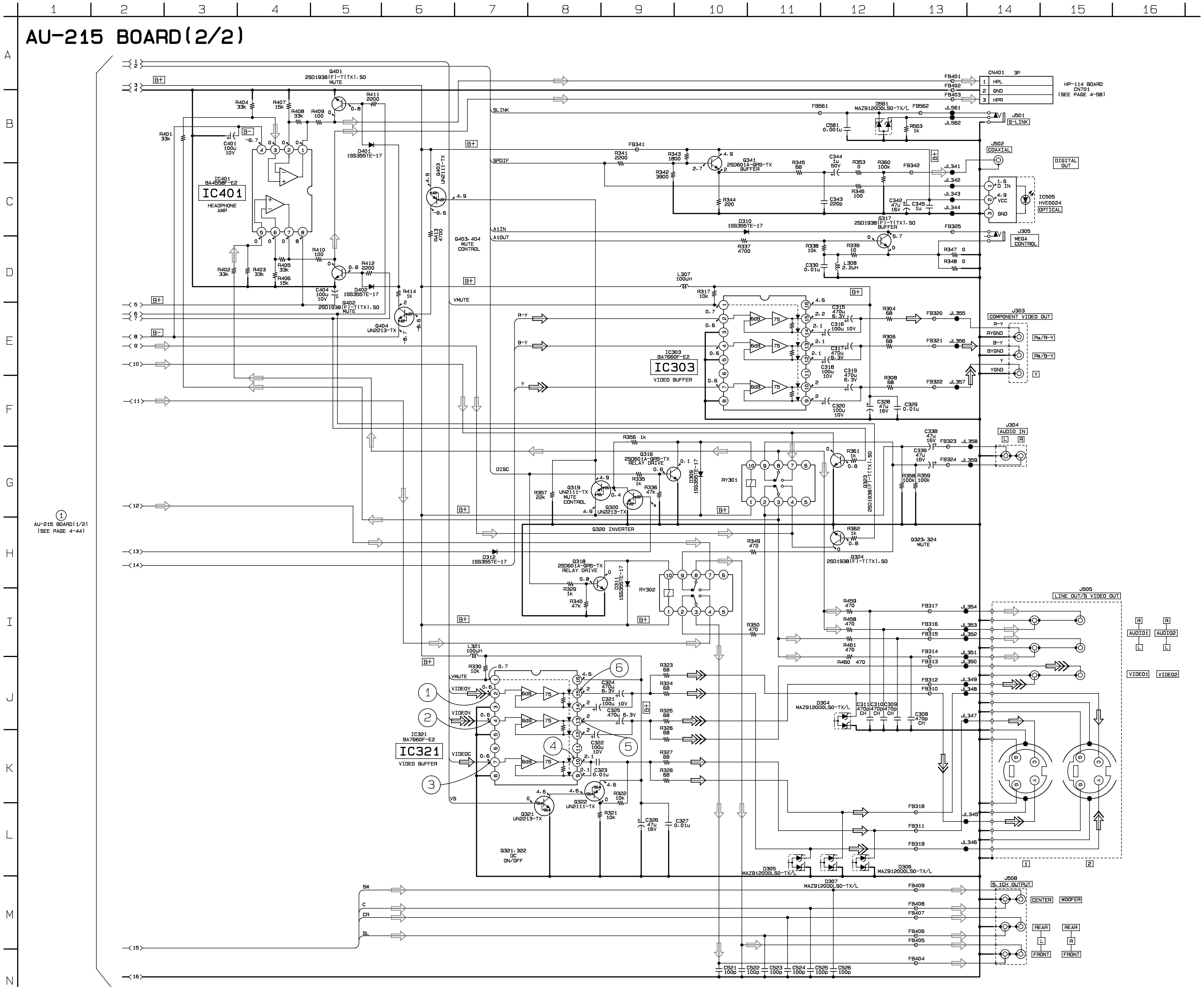
AU-215 (AUDIO) SCHEMATIC DIAGRAM • See page 4-39 for printed wiring board.

– Ref. No.: AU-215 board; 2,000 series –


AU-215 BOARD(1/2)
NO MARK:DVD/CD PLAY
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB
CN301 28P
MB-85 BOARD CN005 (SEE PAGE 4-36)
CN303 7P
MB-85 BOARD CN004 (SEE PAGE 4-19)
CN302 13P
MB-85 BOARD CN007 (SEE PAGE 4-36)
CN304 8P
HS-034SF BOARD CN201 (E,PX) (SEE PAGE 4-66)
HS-034SU BOARD CN201 (US,Canadian) (SEE PAGE 4-70)
ET301
ET302
IC301 NJM78M08FA +8V REG
IC302 NJM79M09FA -9V REG
IC431 BA4558F-E2 LPF +6dB
IC502 BA4558F-E2 LPF +6dB
IC541 BA4558F-E2 LPF +12dB
IC571 BA4558F-E2 LPF +12dB,+16dB
Q431,432 GAIN CONTROL
Q304 MUTE CONTROL
Q305,306 INVERTER
Q301,307 INVERTER
Q314,315 LEVEL SHIFT
Q308-311 INVERTER
Q303 2SB709A-QRS-TX MUTE CONTROL
D431 DAP202K-T-146
D525 DAP202K-T-146
D551 DAP202K-T-146
D591 DAP202K-T-146
D303 RB411D-T146
AUDIOLT
AUDIORT
AUDIOL
AUDIOR
AUDIOLS
AUDIORS
AUDIOC
AUDIOLFE
SL
SR
C
SW
① AU-215 BOARD(2/2) (SEE PAGE 4-45)

AU-215 (VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-39 for printed wiring board.

– Ref. No.: AU-215 board; 2,000 series –

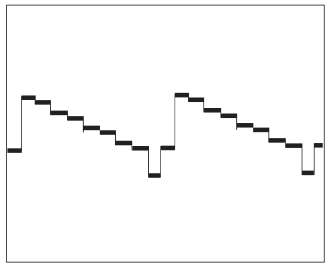

AU-215 BOARD(2/2)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J K L M N
IC401
BA4558F-E2
HEADPHONE AMP
Q401 2SD1938(F)-T(TX).SO MUTE
Q402 2SD1938(F)-T(TX).SO MUTE
Q403 UN2111-TX
Q404 UN2213-TX
Q403, 404 MUTE CONTROL
D401 1SS355TE-17
D402 1SS355TE-17
Q341 2SD601A-QRS-TX BUFFER
Q317 2SD1938(F)-T(TX).SO BUFFER
D310 1SS355TE-17
D561 MAZ9120D0LS0-TX/L
CN401 3P
HPL
GND
HPR
HP-114 BOARD CN701 (SEE PAGE 4-58)
J501 S-LINK
J502 COAXIAL
DIGITAL OUT
IC505 HVE0024 OPTICAL
D IN
VCC
GND
J305 MEGA CONTROL
SLINK
SPDIF
A1IN
A1OUT
VMUTE
R-Y
B-Y
Y
IC303 BA7660F-E2
IC303
VIDEO BUFFER
J303 COMPONENT VIDEO OUT
R-Y
RYGND
B-Y
BYGND
Y
YGND
PR/R-Y
PB/B-Y
Y
J304 AUDIO IN
L R
DISC
Q316 2SD601A-QRS-TX RELAY DRIVE
Q319 UN2111-TX MUTE CONTROL
Q320 UN2213-TX
Q320 INVERTER
RY301
Q323 2SD1938(F)-T(TX).SO
Q324 2SD1938(F)-T(TX).SO
Q323, 324 MUTE
D312 1SS355TE-17
Q318 2SD601A-QRS-TX RELAY DRIVE
D311 1SS355TE-17
RY302
① AU-215 BOARD(1/2) (SEE PAGE 4-44)
J505 LINE OUT/S VIDEO OUT
AUDIO1
AUDIO2
VIDEO1
VIDEO2
IC321 BA7660F-E2
IC321
VIDEO BUFFER
VMUTE
VIDEOY
VIDEOV
VIDEOC
VS
Q321 UN2213-TX
Q322 UN2111-TX
Q321, 322 DC ON/OFF
D304 MAZ9120D0LS0-TX/L
D305 MAZ9120D0LS0-TX/L
D306 MAZ9120D0LS0-TX/L
D307 MAZ9120D0LS0-TX/L
J508 5.1CH OUTPUT
SW
C
CR
SL
CENTER
WOOFER
REAR L
REAR R
FRONT
FRONT
1 2 3 4 5 6

NO MARK : DVD/CD PLAY
*: IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨⇨	⇨⇨⇨	⇨

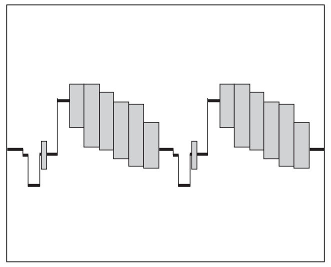
• Waveforms

❶ IC321 ②



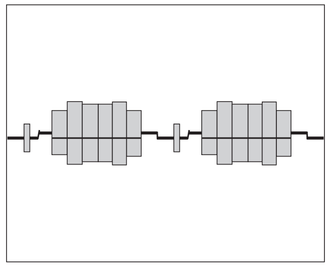
1.1 Vp-p (H)

❷ IC321 ④



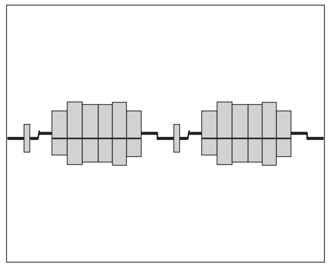
1.2 Vp-p (H)

❸ IC321 ⑦



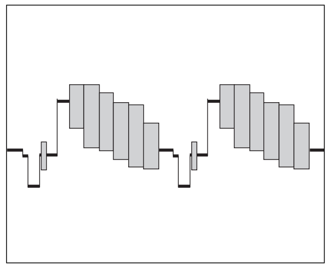
860 mVp-p (H)

❹ IC321 ⑩



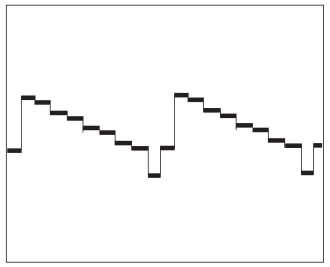
1.8 Vp-p (H)

❺ IC321 ⑬



2.4 Vp-p (H)

❻ IC321 ⑮



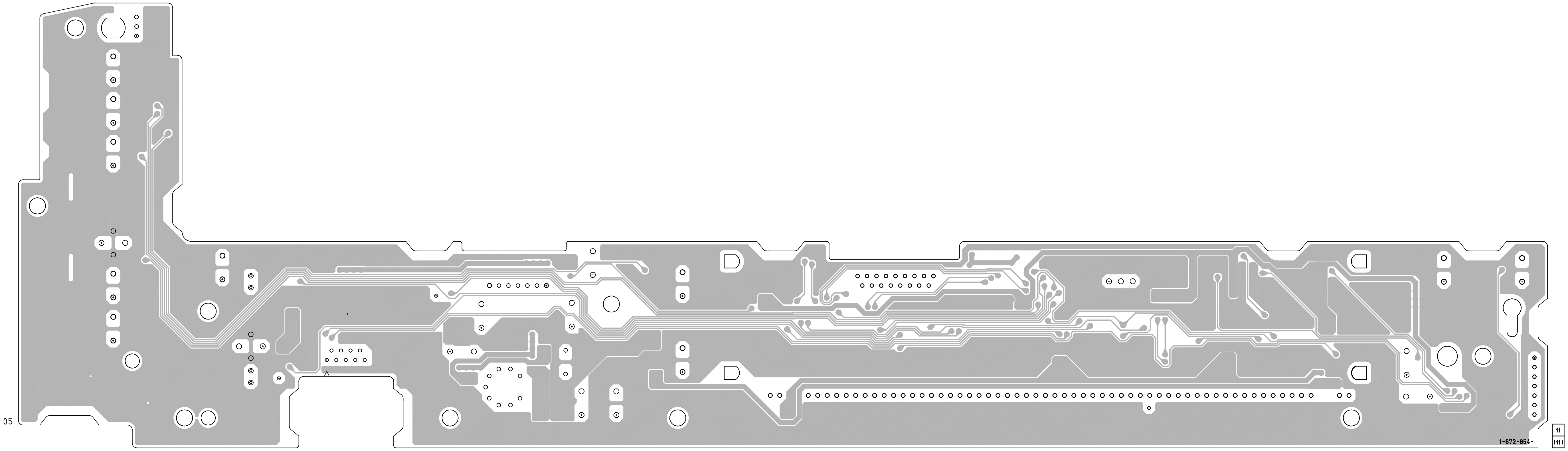
2.0 Vp-p (H)

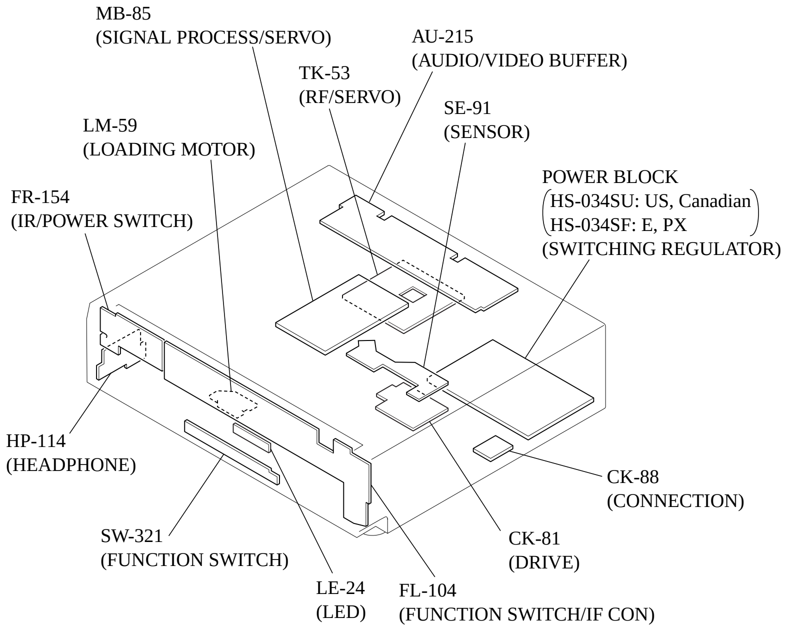
FL-104 (FUNCTION SWITCH/IF CON), SW-321 (FUNCTION SWITCH) AND CK-88 (CONNECTION) PRINTED WIRING BOARDS

– Ref. No.: FL-104 board, SW-321 board and CK-88 board; 2,000 series –

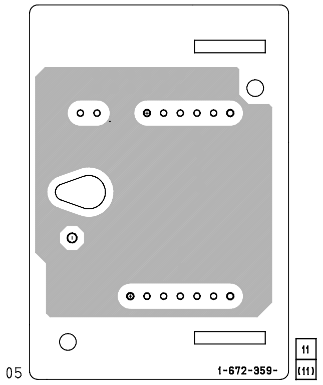
There are few cases that the part isn't mounted in this model is printed on this diagram.

FL-104 BOARD(SIDE A)

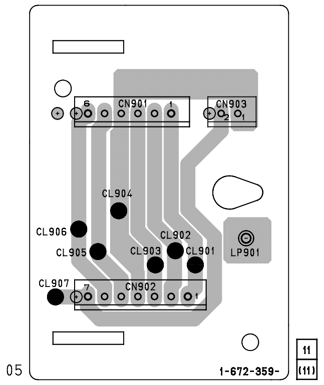

05
1-672-854-
11
(11)


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

CK-88 BOARD(SIDE A)

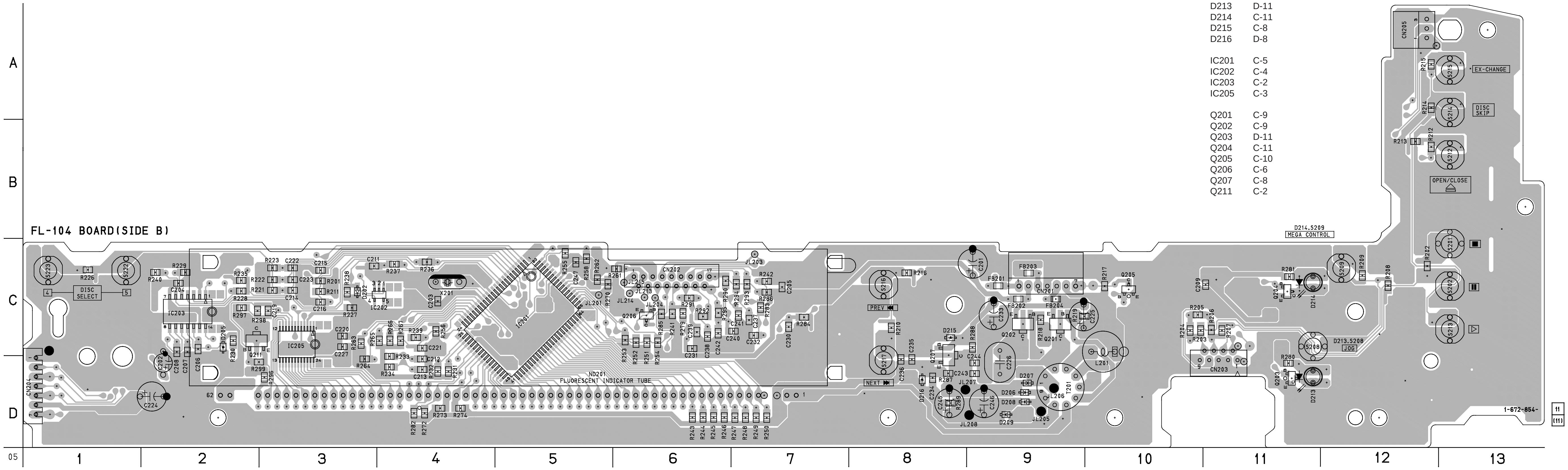

05
1-672-359-
11
(11)

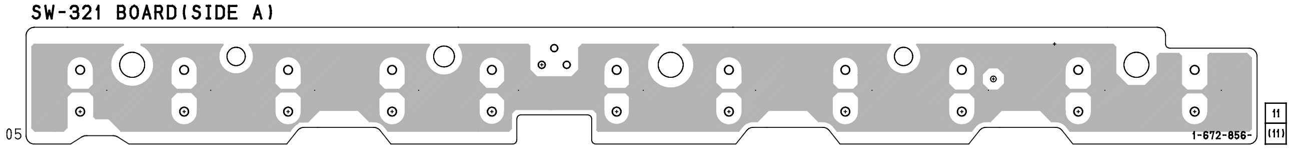
CK-88 BOARD(SIDE B)

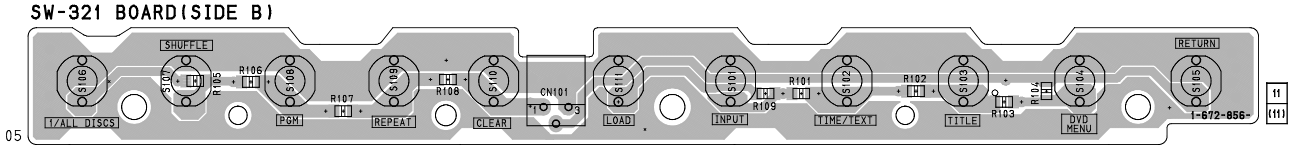

6
CN901
1
CN903
CL904
CL906
CL902
CL905
CL903
CL901
LP901
CL907
7
CN902
05
1-672-359-
11
(11)

FL-104 BOARD
(SIDE B)

CN201	C-9
CN202	C-6
CN203	D-11
CN204	D-1
CN205	A-12
D202	C-3
D205	C-2
D206	D-9
D209	D-9
D213	D-11
D214	C-11
D215	C-8
D216	D-8
IC201	C-5
IC202	C-4
IC203	C-2
IC205	C-3
Q201	C-9
Q202	C-9
Q203	D-11
Q204	C-11
Q205	C-10
Q206	C-6
Q207	C-8
Q211	C-2


FL-104 BOARD(SIDE B)
A
B
C
D
05
1
2
3
4
5
6
7
8
9
10
11
12
13
DISC SELECT
PREV
NEXT
ND201
FLUORESCENT INDICATOR TUBE
MEGA CONTROL
D214,S209
D213,S208
JOG
EX-CHANGE
DISC SKIP
OPEN/CLOSE
1-672-854-
11
(11)

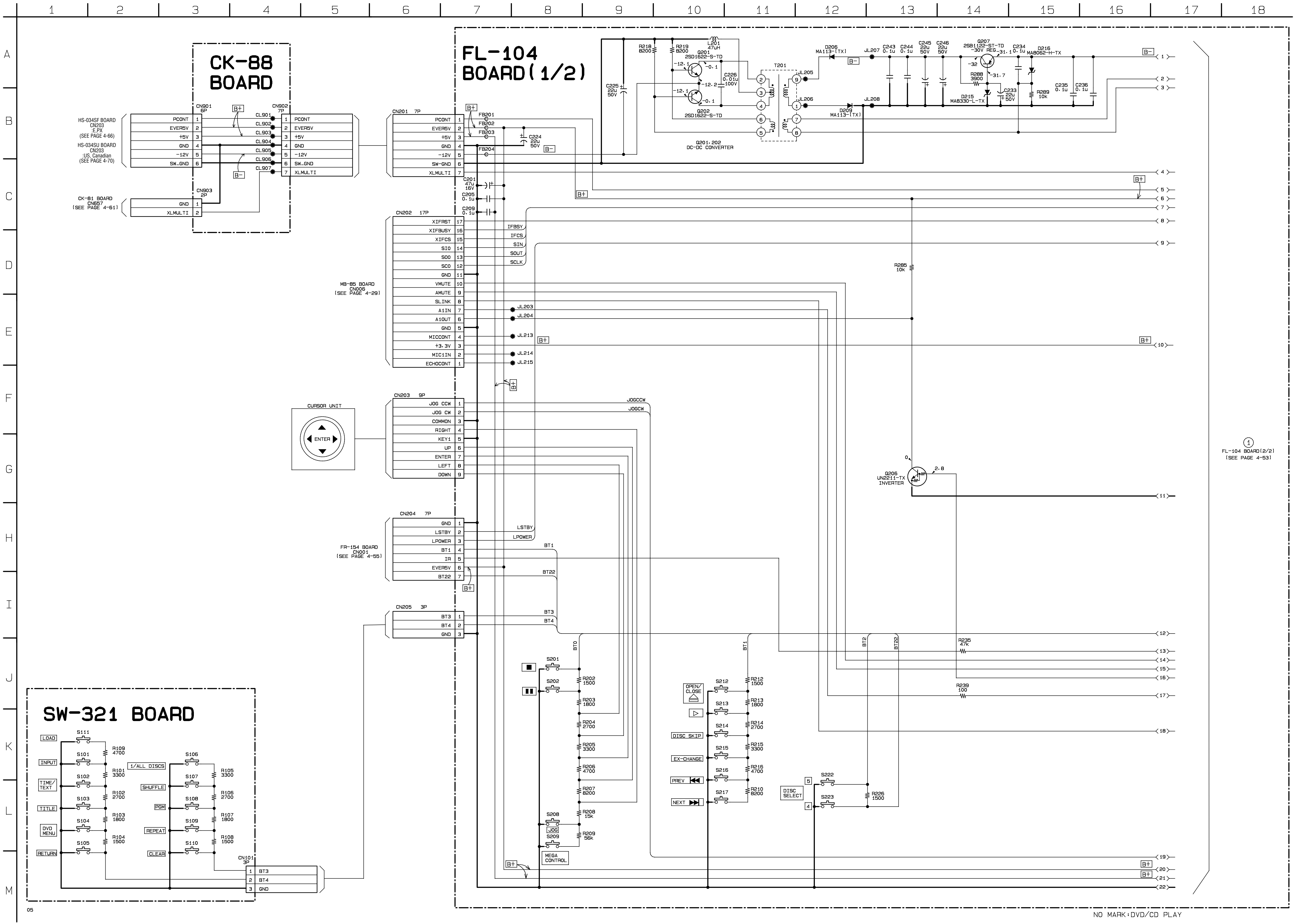

SW-321 BOARD(SIDE A)
05
1-672-856-
11
(11)


SW-321 BOARD(SIDE B)
SHUFFLE
1/ALL DISCS
PGM
REPEAT
CLEAR
CN101
LOAD
INPUT
TIME/TEXT
TITLE
DVD MENU
RETURN
05
1-672-856-
11
(11)

FUNCTION SWITCH/IF CON, FUNCTION SWITCH
FL-104, SW-321

FL-104 (FUNCTION SWITCH), SW-321 (FUNCTION SWITCH) AND CK-88 (CONNECTION) SCHEMATIC DIAGRAM • See page 4-47 for printed wiring boards.

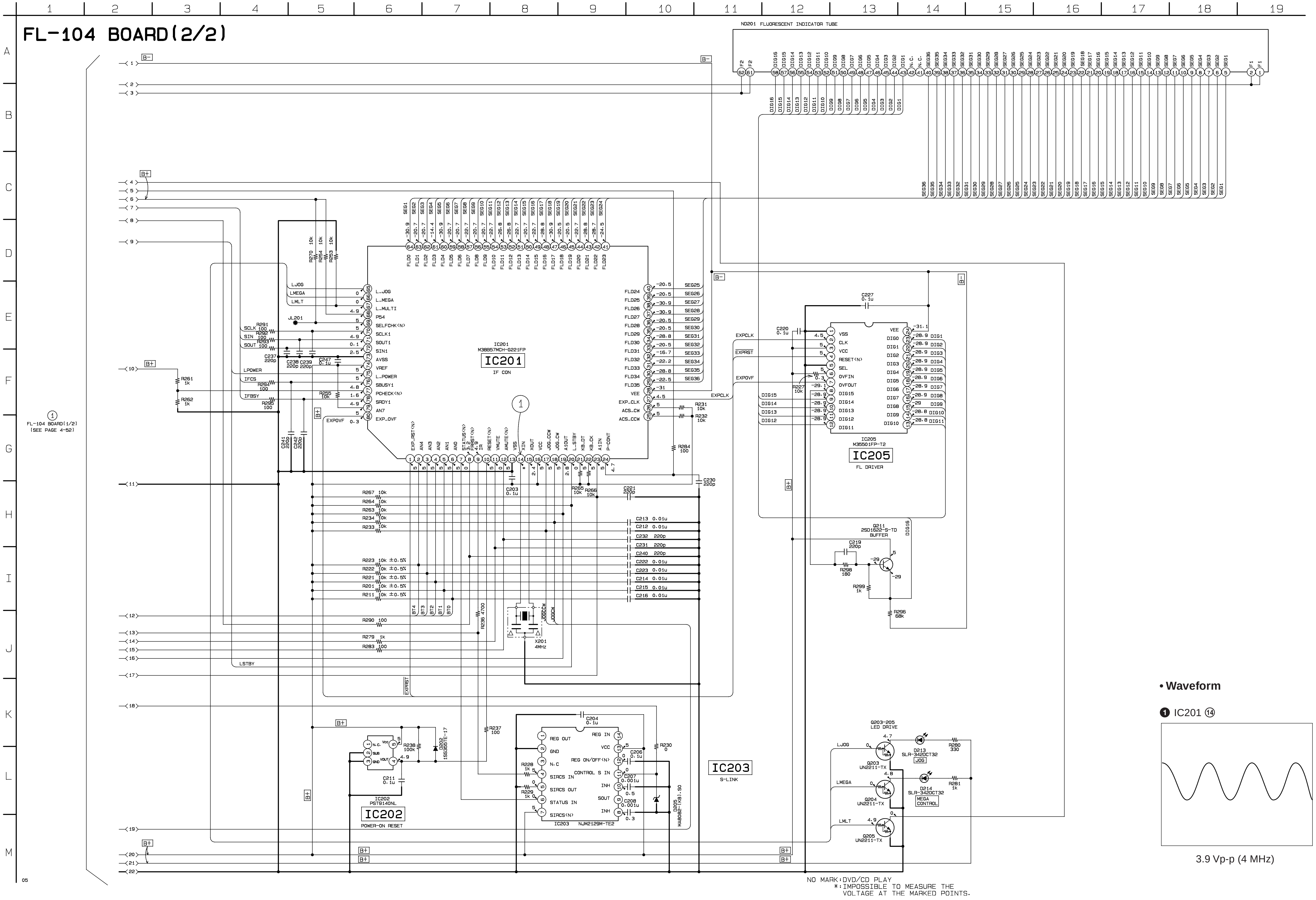
– Ref. No.: FL-104 board, SW-321 board and CK-88 board; 2,000 series –


CK-88 BOARD
FL-104 BOARD (1/2)
SW-321 BOARD
CN901 6P
CN902 7P
CN903 2P
HS-034SF BOARD CN203 :E,PX (SEE PAGE 4-66)
HS-034SU BOARD CN203 :US, Canadian (SEE PAGE 4-70)
CK-81 BOARD CN657 (SEE PAGE 4-61)
PCONT
EVER5V
+5V
GND
-12V
SW_GND
XLMULTI
CN201 7P
CN202 17P
XIFRST
XIFBUSY
XIFCS
SIO
SOO
SCO
VMUTE
AMUTE
SLINK
A1IN
A1OUT
MICCONT
+3.3V
MIC1IN
ECHOCONT
MB-85 BOARD CN006 (SEE PAGE 4-29)
CN203 9P
JOG CCW
JOG CW
COMMON
RIGHT
KEY1
UP
ENTER
LEFT
DOWN
CURSOR UNIT
CN204 7P
LSTBY
LPOWER
BT1
IR
BT22
FR-154 BOARD CN001 (SEE PAGE 4-55)
CN205 3P
BT3
BT4
CN101 3P
Q201 2SD1622-S-TD
Q202 2SD1622-S-TD
Q201,202 DC-DC CONVERTER
T201
L201 47uH
D206 MA113-(TX)
D209 MA113-(TX)
Q207 2SB1122-ST-TD -30V REG.
D216 MA8062-H-TX
D215 MA8330-L-TX
Q206 UN2211-TX INVERTER
R285 10k
R235 47k
R239 100
R226 1500
S201
S202
S208 JOG
S209 MEGA CONTROL
S212 OPEN/CLOSE
S213
S214 DISC SKIP
S215 EX-CHANGE
S216 PREV
S217 NEXT
S222
S223 DISC SELECT
S111 LOAD
S101 INPUT
S102 TIME/TEXT
S103 TITLE
S104 DVD MENU
S105 RETURN
S106 1/ALL DISCS
S107 SHUFFLE
S108 PGM
S109 REPEAT
S110 CLEAR
FL-104 BOARD (2/2) (SEE PAGE 4-53)
05

NO MARK: DVD/CD PLAY

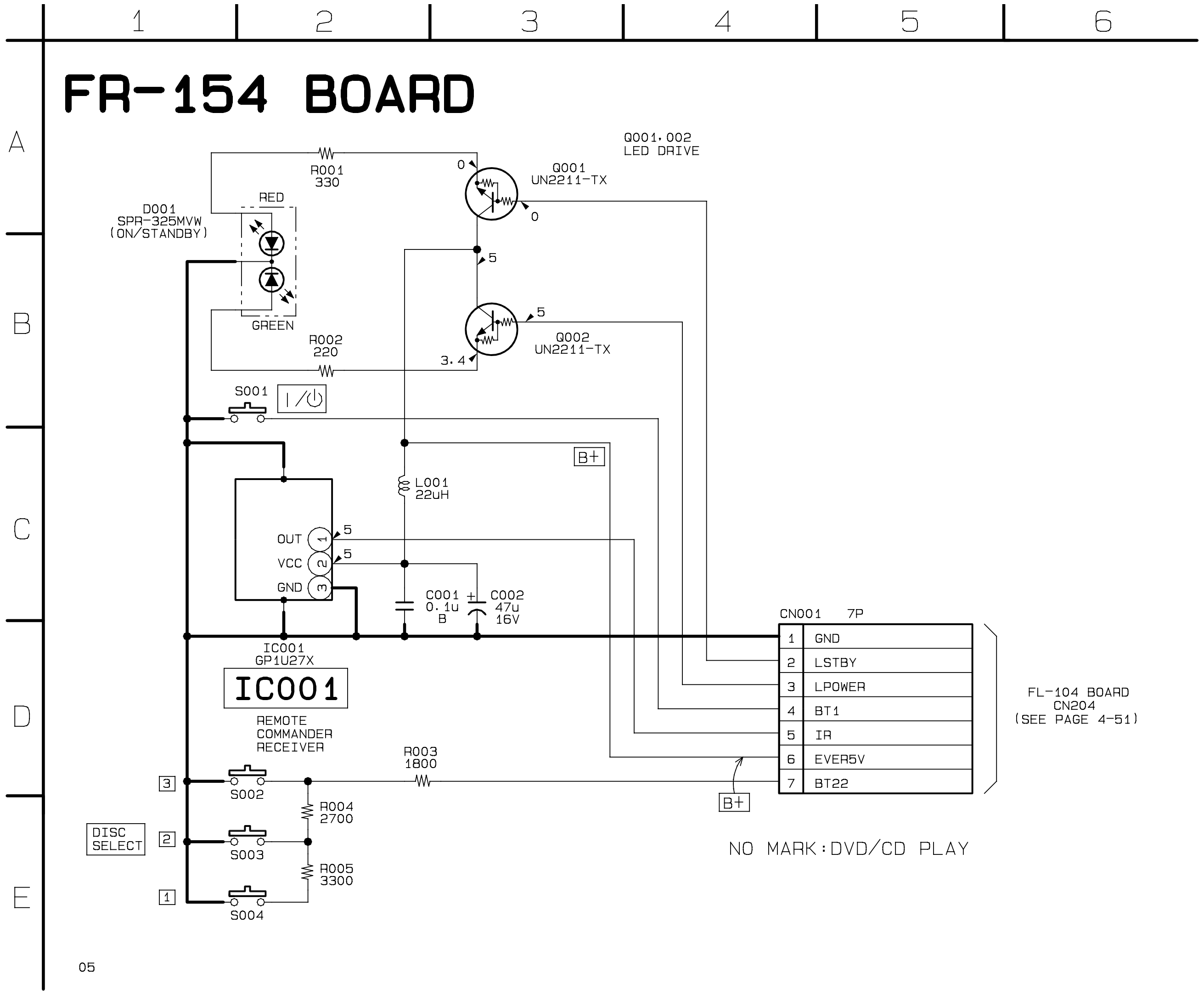
FL-104 (IF CON) SCHEMATIC DIAGRAM • See page 4-47 for printed wiring board.

– Ref. No.: FL-104 board; 2,000 series –


FL-104 BOARD(2/2)
ND201 FLUORESCENT INDICATOR TUBE
IC201 M38857MCH-G221FP
IC201
IF CON
IC205 M35501FP-T2
IC205
FL DRIVER
IC203
S-LINK
IC203 NJM2129M-TE2
IC202 PST9140NL
IC202
POWER-ON RESET
Q211 2SD1622-S-TD BUFFER
Q203-205 LED DRIVE
Q203 UN2211-TX
Q204 UN2211-TX
Q205 UN2211-TX
D213 SLR-342OCT32 JOG
D214 SLR-342OCT32 MEGA CONTROL
D202 1SS355TE-17
D205 MA8082-(K8).S0
X201 4MHz
①
FL-104 BOARD(1/2) (SEE PAGE 4-52)
NO MARK:DVD/CD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.
• Waveform
❶ IC201 ⑭
3.9 Vp-p (4 MHz)

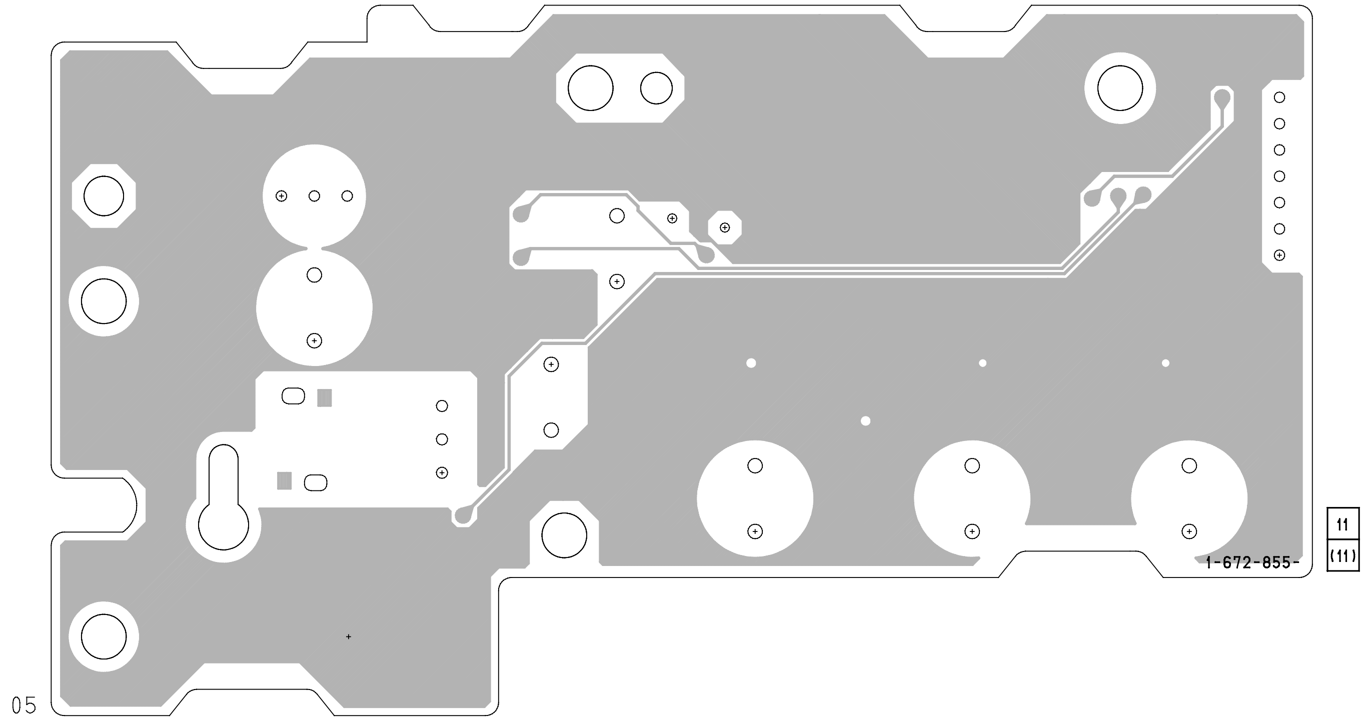
FR-154 (IR/POWER SWITCH) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: FR-154 board; 2,000 series –

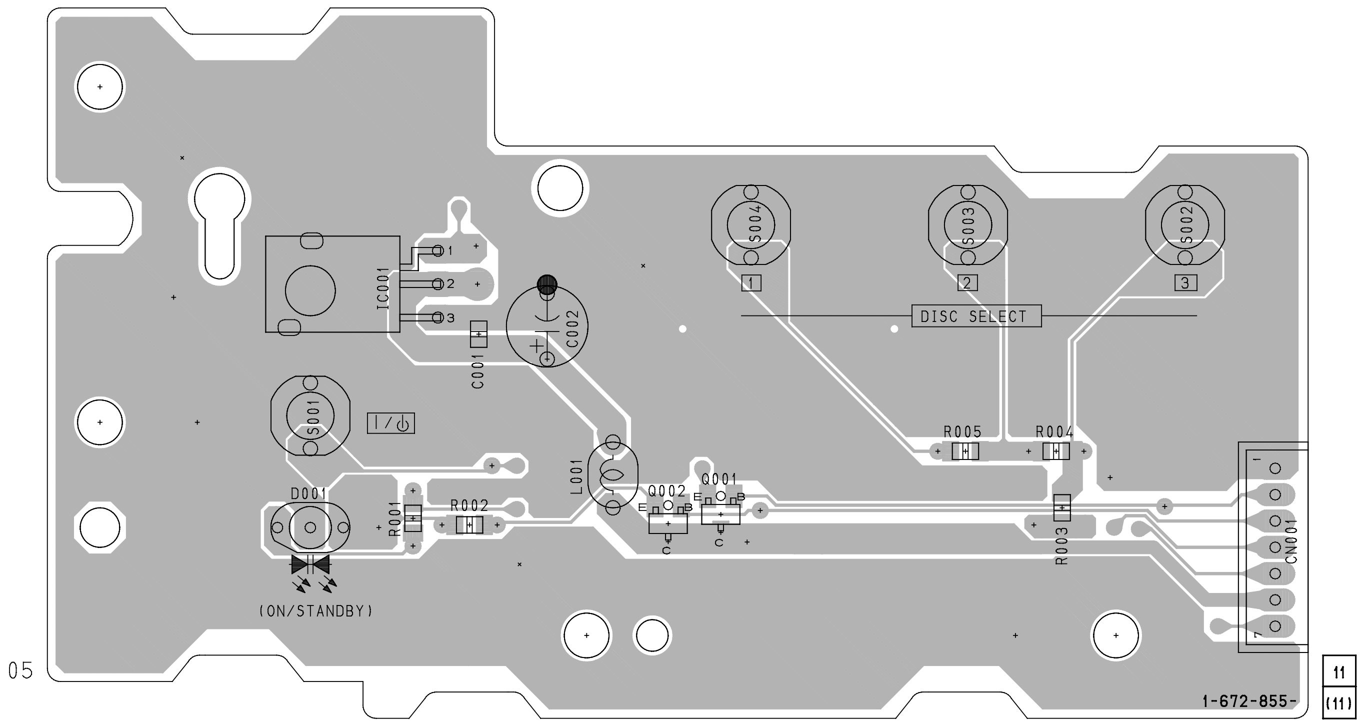

1
2
3
4
5
6
A
B
C
D
E
FR-154 BOARD
Q001,002
LED DRIVE
R001
330
Q001
UN2211-TX
0
0
5
5
3.4
D001
SPR-325MVW
(ON/STANDBY)
RED
GREEN
R002
220
Q002
UN2211-TX
S001
I/⏻
B+
L001
22uH
OUT 1
VCC 2
GND 3
5
5
C001
0.1u
B
C002
47u
16V
IC001
GP1U27X
IC001
REMOTE
COMMANDER
RECEIVER
CN001 7P
1 GND
2 LSTBY
3 LPOWER
4 BT1
5 IR
6 EVER5V
7 BT22
FL-104 BOARD
CN204
(SEE PAGE 4-51)
R003
1800
3
S002
R004
2700
DISC
SELECT
2
S003
R005
3300
1
S004
B+
NO MARK:DVD/CD PLAY
05

There are few cases that the part isn't mounted in this model is printed on this diagram.

FR-154 BOARD(SIDE A)


05
11
(11)
1-672-855-

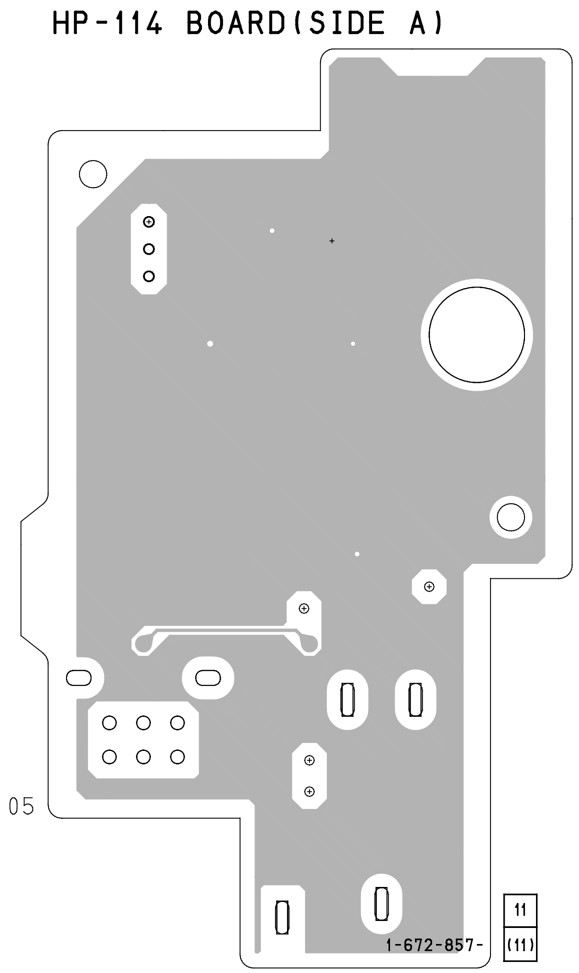
FR-154 BOARD(SIDE B)

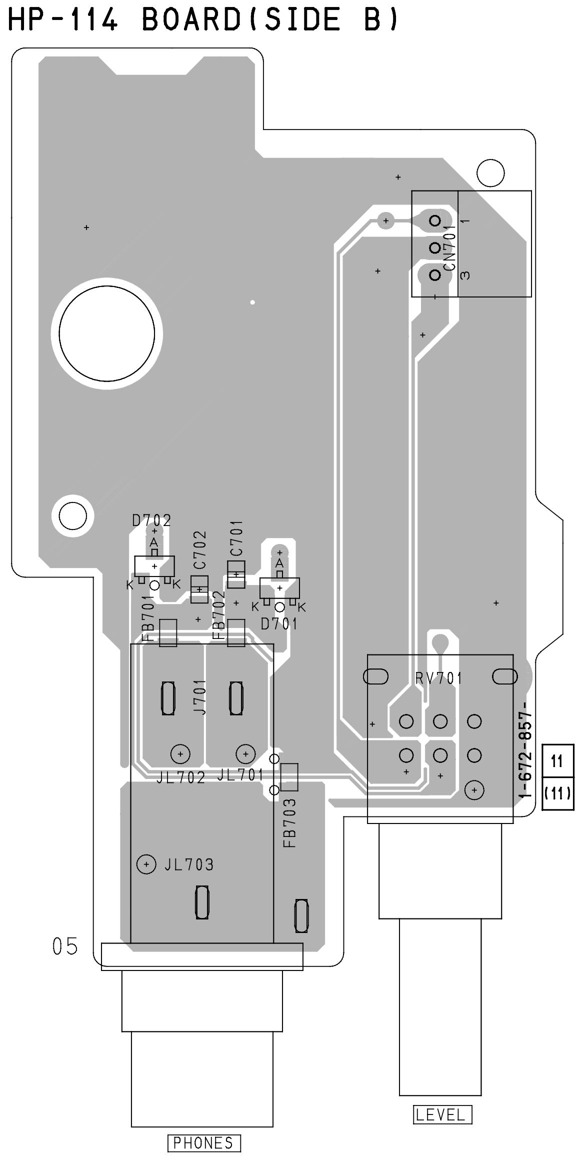

S004
S003
S002
1
2
3
DISC SELECT
IC001
1
2
3
C001
C002
S001
I/⏻
D001
(ON/STANDBY)
R001
R002
L001
Q002
Q001
R005
R004
R003
CN001
1
7
05
11
(11)
1-672-855-

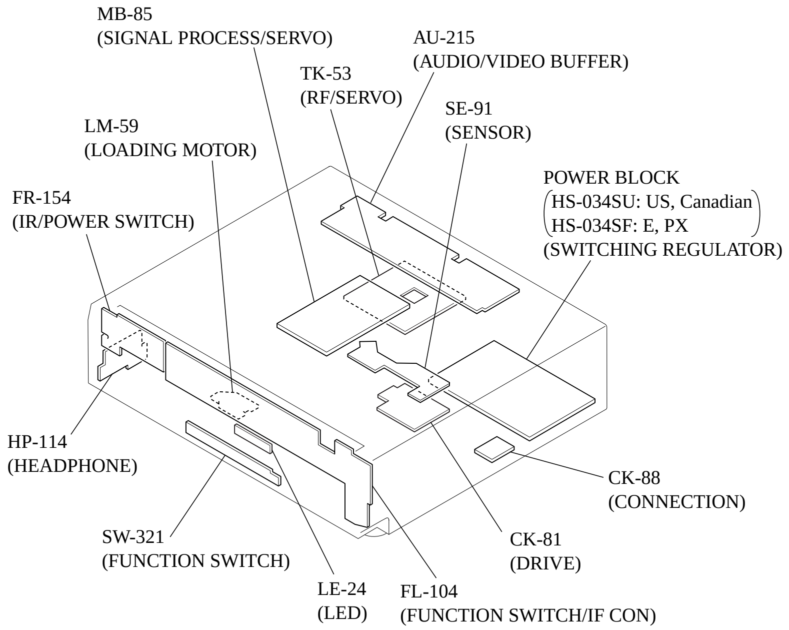
HP-114 (HEADPHONE) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

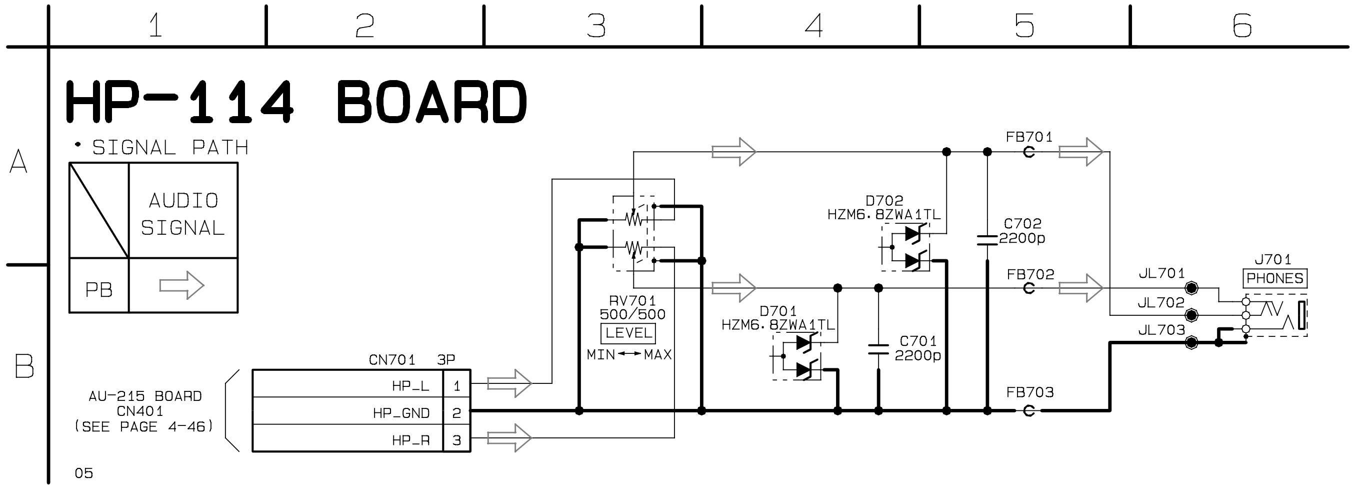
– Ref. No.: HP-114 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.


HP-114 BOARD(SIDE A)
05
1-672-857-
11
(11)


HP-114 BOARD(SIDE B)
CN701
1
3
D702
C702
C701
D701
FB701
FB702
J701
JL702
JL701
JL703
FB703
RV701
05
1-672-857-
11
(11)
PHONES
LEVEL


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

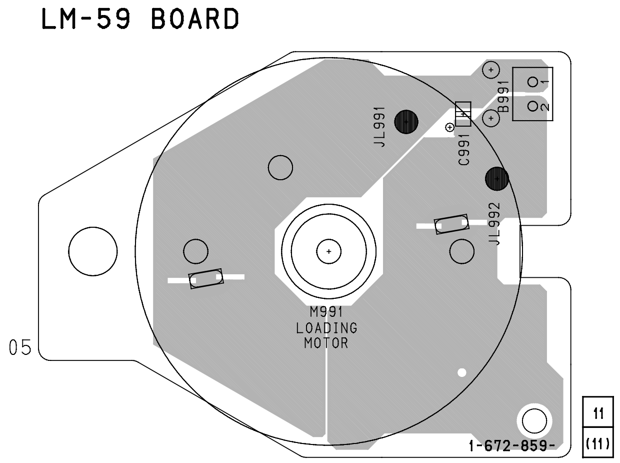

1
2
3
4
5
6
A
B
HP-114 BOARD
• SIGNAL PATH
AUDIO SIGNAL
PB
FB701
D702
HZM6.8ZWA1TL
C702
2200p
FB702
RV701
500/500
LEVEL
MIN ←→ MAX
D701
HZM6.8ZWA1TL
C701
2200p
JL701
JL702
JL703
J701
PHONES
CN701 3P
HP_L 1
HP_GND 2
HP_R 3
AU-215 BOARD
CN401
(SEE PAGE 4-46)
FB703
05

LM-59 (LOADING MOTOR), CK-81 (DRIVE) PRINTED WIRING BOARDS

– Ref. No.: CK-81 board; 2,000 series –

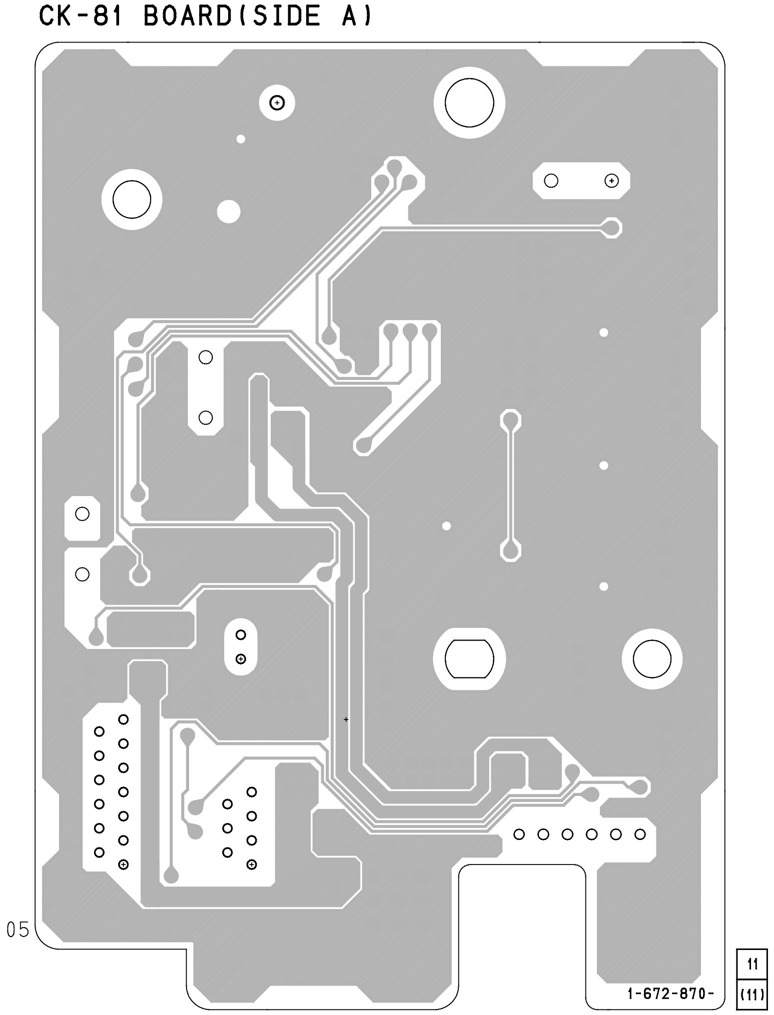
There are few cases that the part isn't mounted in this model is printed on this diagram.

LM-59 BOARD



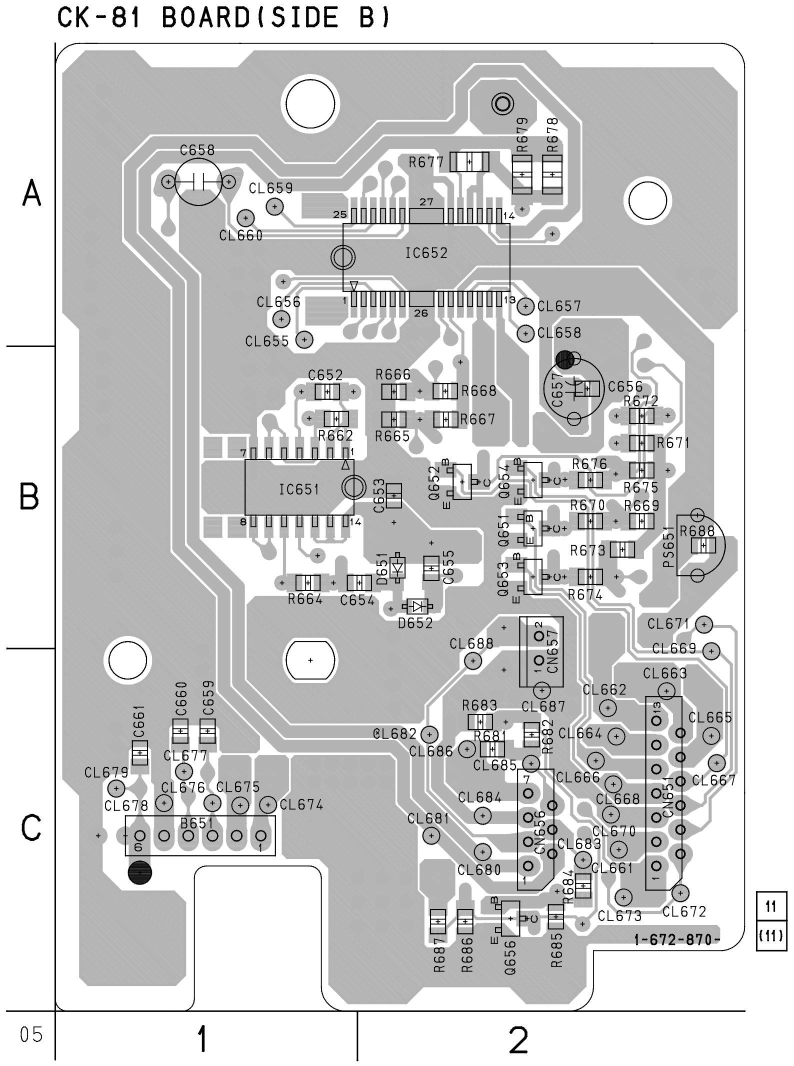
JL991
C991
B991
1
2
JL992
M991
LOADING
MOTOR
05
11
(11)
1-672-859-

CK-81 BOARD(SIDE A)



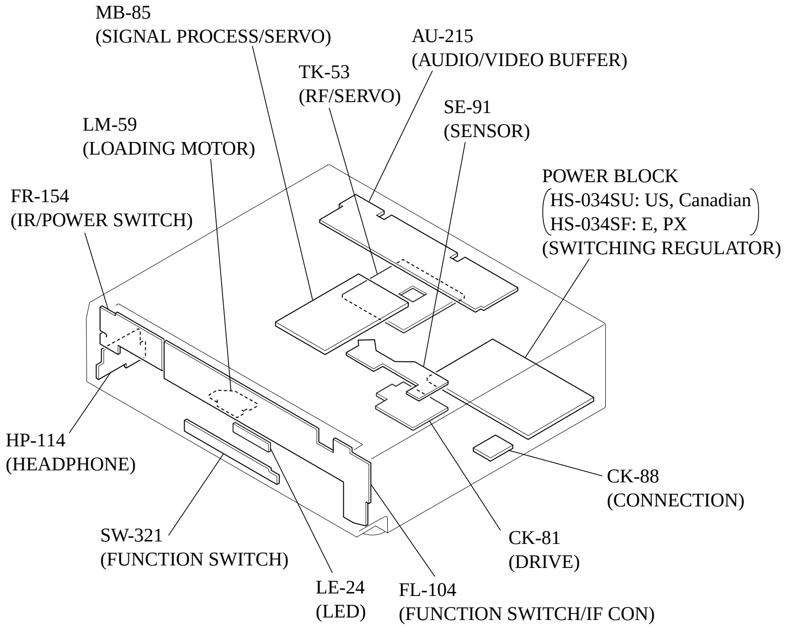
05
11
(11)
1-672-870-

CK-81 BOARD(SIDE B)



A
B
C
1
2
05
C658
CL659
CL660
R677
R679
R678
IC652
27
25
14
26
CL656
CL655
CL657
CL658
C652
R666
R668
R667
R662
R665
C657
C656
R672
R671
IC651
C653
Q652
Q654
R676
R675
R670
R669
Q651
R673
R688
PS651
Q653
R674
R664
C654
D651
C655
D652
CL671
CL669
CL688
CN657
CL663
CL662
CL665
R683
CL687
CL682
R681
R682
CL664
CL686
CL685
C661
C660
C659
CL677
CL679
CL676
CL675
CL678
CL674
CN651
CL684
CL666
CL668
CL667
CL681
CN656
CL683
CL670
CL680
CL661
R684
CL673
CL672
R687
R686
Q656
R685
11
(11)
1-672-870-

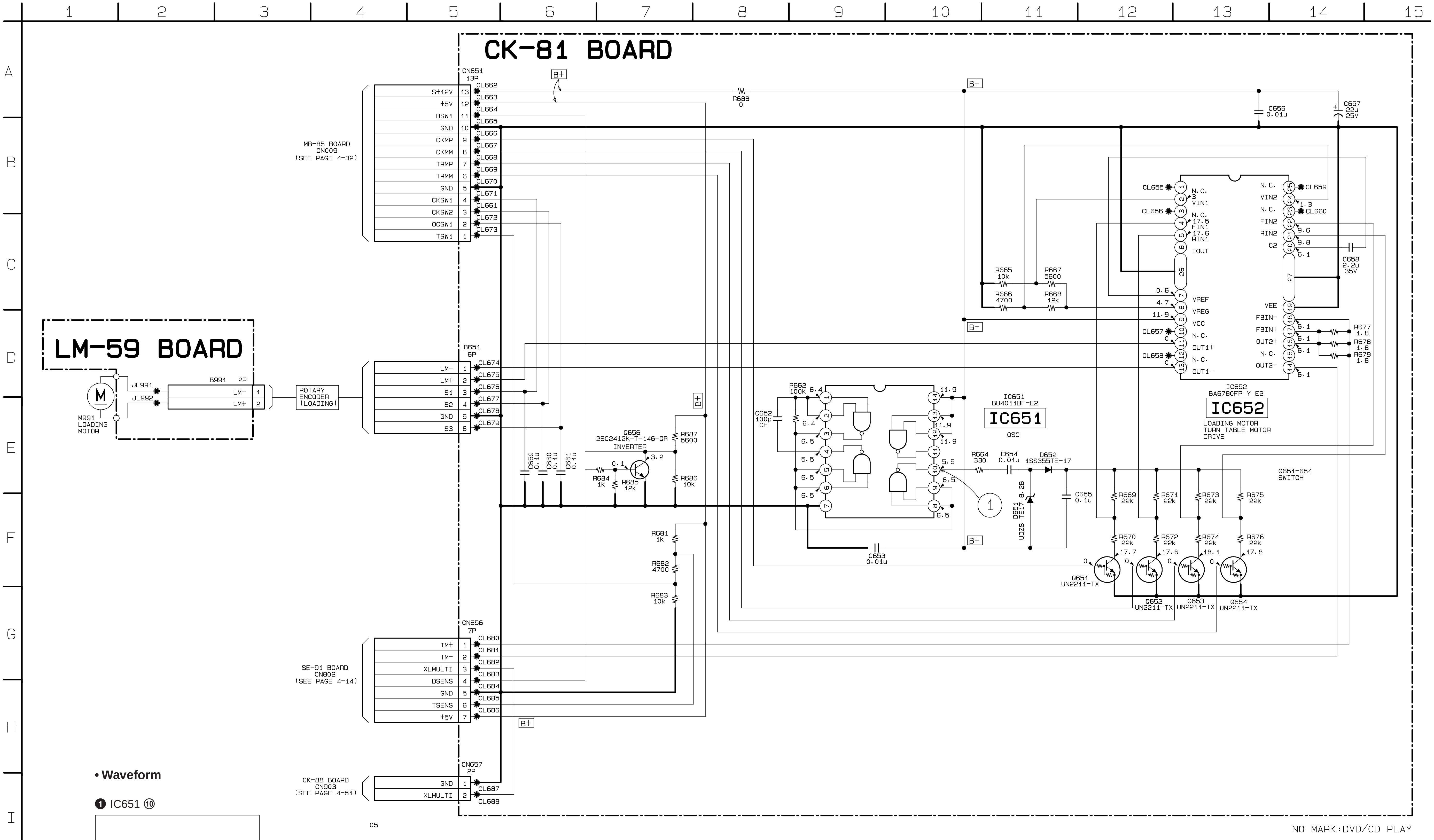
CK-81 BOARD (SIDE B)	
CN651	A-1
CN656	A-1
CN657	B-1
D651	B-2
D652	B-2
IC651	B-2
IC652	C-2
Q651	B-1
Q652	B-1
Q653	B-1
Q654	B-1
Q656	A-1



MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

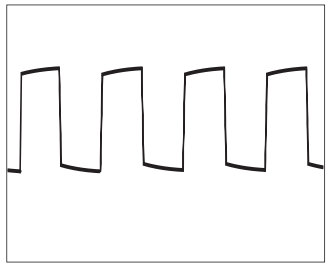
LM-59 (LOADING MOTOR), CK-81 (DRIVE) SCHEMATIC DIAGRAM

– Ref. No.: CK-81 board; 2,000 series –


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I
CK-81 BOARD
LM-59 BOARD
M991 LOADING MOTOR
JL991
JL992
B991 2P
LM− 1
LM+ 2
ROTARY ENCODER (LOADING)
MB-85 BOARD CN009 (SEE PAGE 4-32)
CN651 13P
S+12V 13
+5V 12
DSW1 11
GND 10
CKMP 9
CKMM 8
TRMP 7
TRMM 6
GND 5
CKSW1 4
CKSW2 3
OCSW1 2
TSW1 1
CL662 CL663 CL664 CL665 CL666 CL667 CL668 CL669 CL670 CL671 CL661 CL672 CL673
B651 6P
LM− 1
LM+ 2
S1 3
S2 4
GND 5
S3 6
CL674 CL675 CL676 CL677 CL678 CL679
C659 0.1u
C660 0.1u
C661 0.1u
Q656 2SC2412K-T-146-QR INVERTER
R684 1k
R685 12k
R686 10k
R687 5600
R681 1k
R682 4700
R683 10k
R688 0
B+
SE-91 BOARD CN802 (SEE PAGE 4-14)
CN656 7P
TM+ 1
TM− 2
XLMULTI 3
DSENS 4
GND 5
TSENS 6
+5V 7
CL680 CL681 CL682 CL683 CL684 CL685 CL686
CK-88 BOARD CN903 (SEE PAGE 4-51)
CN657 2P
GND 1
XLMULTI 2
CL687 CL688
R662 100k
C652 100p CH
C653 0.01u
IC651 BU4011BF-E2
IC651 OSC
R664 330
C654 0.01u
D652 1SS355TE-17
D651 UDZS-TE17-8.2B
C655 0.1u
R669 22k
R670 22k
R671 22k
R672 22k
R673 22k
R674 22k
R675 22k
R676 22k
Q651 UN2211-TX
Q652 UN2211-TX
Q653 UN2211-TX
Q654 UN2211-TX
Q651-654 SWITCH
R665 10k
R666 4700
R667 5600
R668 12k
R677 1.8
R678 1.8
R679 1.8
C656 0.01u
C657 22u 25V
C658 2.2u 35V
IC652 BA6780FP-Y-E2
IC652 LOADING MOTOR TURN TABLE MOTOR DRIVE
N.C. VIN1 N.C. FIN1 RIN1 IOUT VREF VREG VCC N.C. OUT1+ N.C. OUT1−
N.C. VIN2 N.C. FIN2 RIN2 C2 VEE FBIN− FBIN+ OUT2+ N.C. OUT2−
CL655 CL656 CL657 CL658 CL659 CL660
1
05
NO MARK:DVD/CD PLAY

• Waveform

❶ IC651 ⑩



11.6 Vp-p (H)

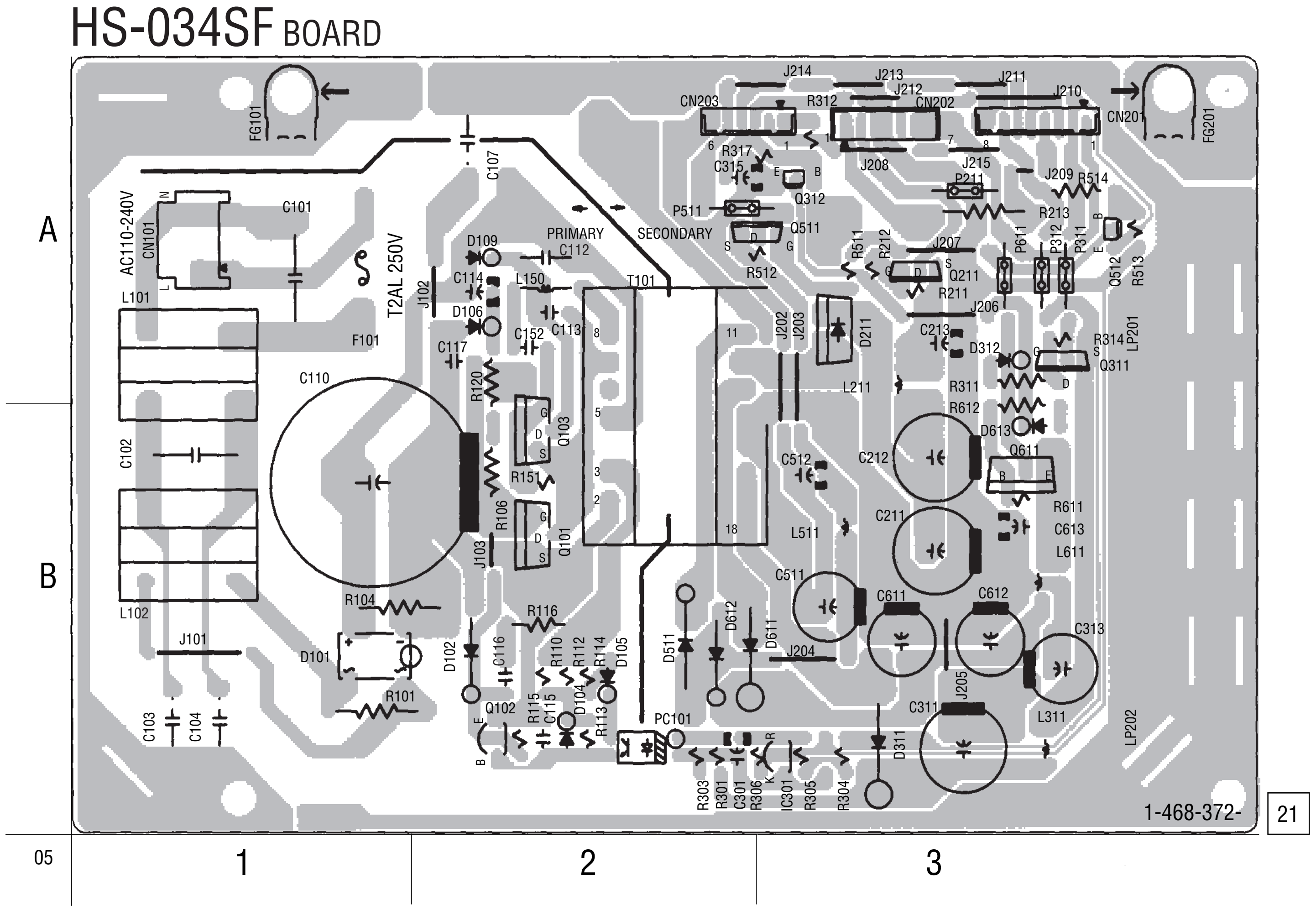
HS-034SF (SWITCHING REGULATOR) PRINTED WIRING BOARD

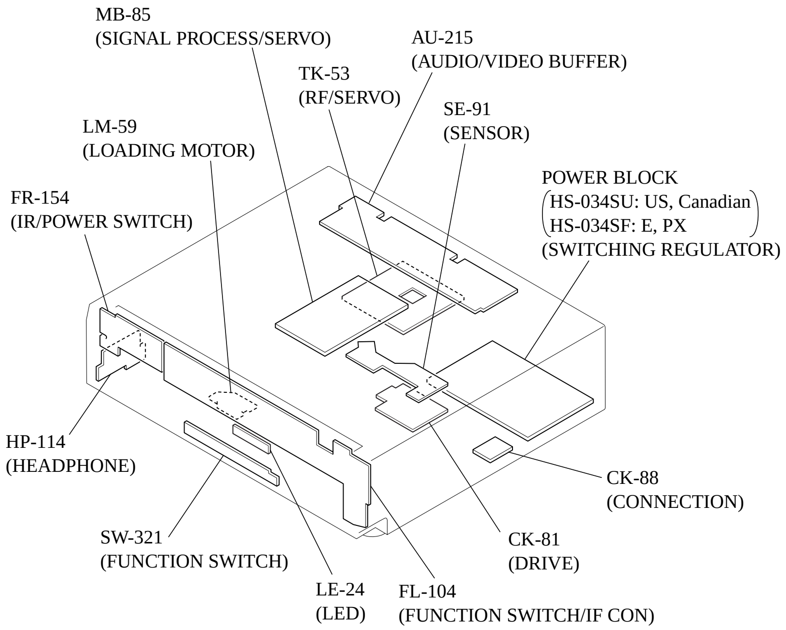
– Ref. No.: HS-034SF board; 6,000 series –

– E, PX –

There are few cases that the part isn't mounted in this model is printed on this diagram.

HS-034SF BOARD	
CN101	A-1
CN201	A-3
CN202	A-3
CN203	A-2
D101	B-1
D102	B-2
D104	B-2
D105	B-2
D106	A-2
D109	A-2
D211	A-3
D311	B-3
D312	A-3
D511	B-2
D611	B-2
D612	B-2
D613	B-3
IC301	B-3
Q101	B-2
Q102	B-2
Q103	B-2
Q211	A-3
Q311	A-3
Q312	A-3
Q511	A-2
Q512	A-3
Q611	B-3

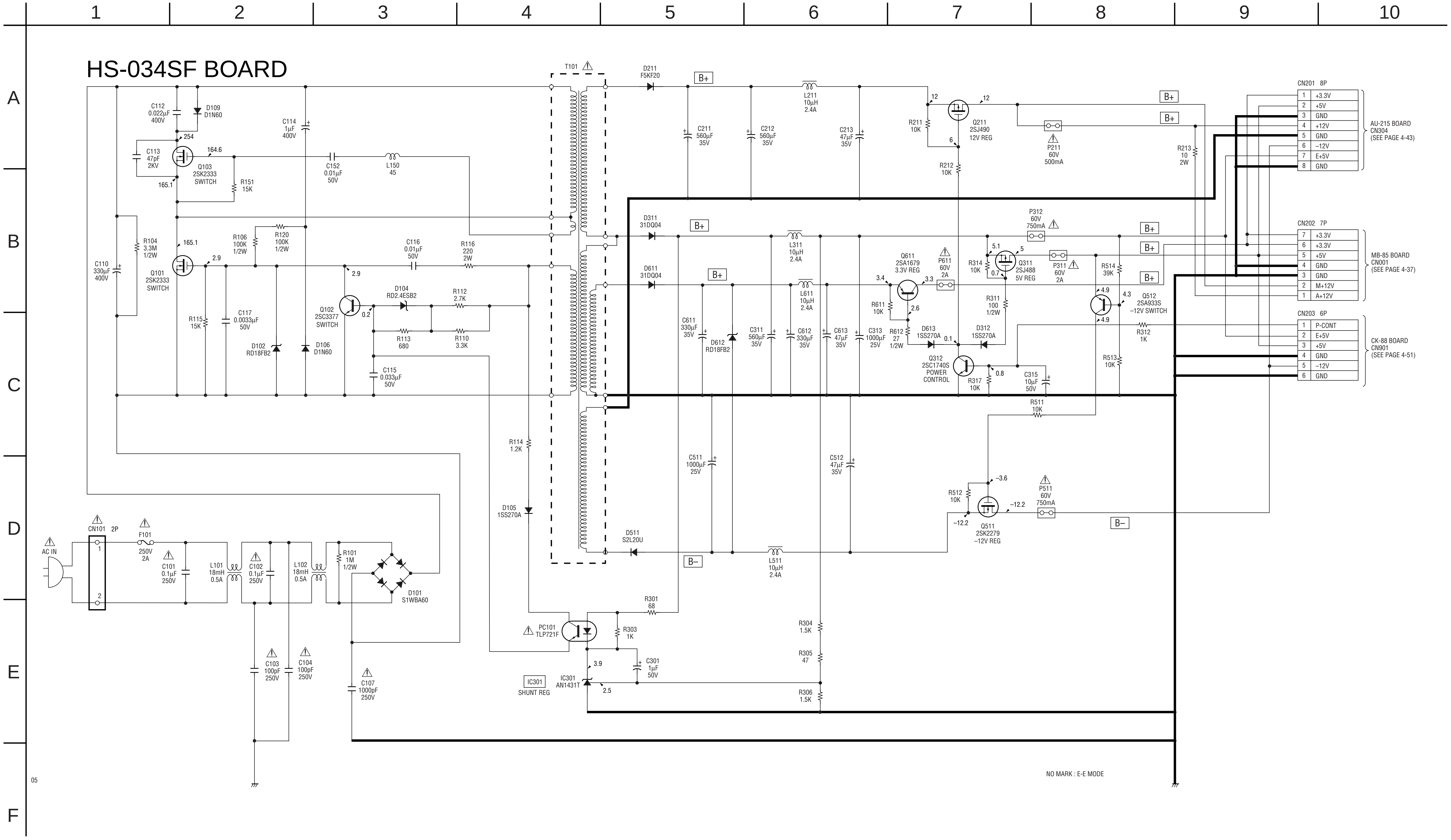

HS-034SF BOARD
A
B
05
1
2
3
1-468-372-
21
AC110-240V
CN101
L101
L102
C101
C102
C103
C104
C107
C110
F101
T2AL 250V
J101
J102
J103
D101
D102
D104
D105
D106
D109
C112
C113
C114
C115
C116
C117
C152
L150
R101
R104
R106
R110
R112
R113
R114
R115
R116
R120
R151
Q101
Q102
Q103
PRIMARY
SECONDARY
T101
FG101
FG201
CN201
CN202
CN203
J204
J205
J206
J207
J208
J209
J210
J211
J212
J213
J214
J215
P211
P311
P312
P511
P611
R211
R212
R213
R311
R312
R317
R511
R512
R513
R514
R611
R612
R314
C211
C212
C213
C311
C313
C315
C511
C512
C611
C612
C613
D211
D311
D312
D511
D611
D612
D613
L211
L311
L511
L611
LP201
LP202
Q211
Q311
Q312
Q511
Q512
Q611
PC101
IC301
R301
R303
R304
R305
R306
C301


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
FR-154
(IR/POWER SWITCH)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

HS-034SF (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: HS-034SF board; 6,000 series –

– E, PX –


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
HS-034SF BOARD
T101
D211 F5KF20
B+
L211 10μH 2.4A
C211 560μF 35V
C212 560μF 35V
C213 47μF 35V
R211 10K
Q211 2SJ490 12V REG
12
6
R212 10K
P211 60V 500mA
R213 10 2W
CN201 8P
1 +3.3V
2 +5V
3 GND
4 +12V
5 GND
6 −12V
7 E+5V
8 GND
AU-215 BOARD CN304 (SEE PAGE 4-43)
C112 0.022μF 400V
D109 D1N60
C114 1μF 400V
C113 47pF 2KV
254
164.6
165.1
Q103 2SK2333 SWITCH
R151 15K
C152 0.01μF 50V
L150 45
C110 330μF 400V
R104 3.3M 1/2W
Q101 2SK2333 SWITCH
2.9
R106 100K 1/2W
R120 100K 1/2W
R115 15K
C117 0.0033μF 50V
D102 RD18FB2
D106 D1N60
Q102 2SC3377 SWITCH
0.2
C116 0.01μF 50V
R116 220 2W
D104 RD2.4ESB2
R112 2.7K
R113 680
R110 3.3K
C115 0.033μF 50V
D311 31DQ04
D611 31DQ04
L311 10μH 2.4A
L611 10μH 2.4A
C611 330μF 35V
D612 RD18FB2
C311 560μF 35V
C612 330μF 35V
C613 47μF 35V
C313 1000μF 25V
R612 27 1/2W
Q611 2SA1679 3.3V REG
3.4
3.3
2.6
P611 60V 2A
R611 10K
D613 1SS270A
0.1
Q312 2SC1740S POWER CONTROL
R317 10K
0.8
D312 1SS270A
R314 10K
Q311 2SJ488 5V REG
5.1
0.7
5
P312 60V 750mA
P311 60V 2A
R311 100 1/2W
C315 10μF 50V
R514 39K
Q512 2SA933S −12V SWITCH
4.9
4.3
R312 1K
R513 10K
R511 10K
CN202 7P
7 +3.3V
6 +3.3V
5 +5V
4 GND
3 GND
2 M+12V
1 A+12V
MB-85 BOARD CN001 (SEE PAGE 4-37)
CN203 6P
1 P-CONT
2 E+5V
3 +5V
4 GND
5 −12V
6 GND
CK-88 BOARD CN901 (SEE PAGE 4-51)
R114 1.2K
D105 1SS270A
C511 1000μF 25V
C512 47μF 35V
R512 10K
−3.6
−12.2
Q511 2SK2279 −12V REG
P511 60V 750mA
B−
D511 S2L20U
L511 10μH 2.4A
AC IN
CN101 2P
F101 250V 2A
C101 0.1μF 250V
L101 18mH 0.5A
C102 0.1μF 250V
L102 18mH 0.5A
R101 1M 1/2W
D101 S1WBA60
C103 100pF 250V
C104 100pF 250V
C107 1000pF 250V
PC101 TLP721F
R301 68
R303 1K
3.9
2.5
C301 1μF 50V
IC301 SHUNT REG
IC301 AN1431T
R304 1.5K
R305 47
R306 1.5K
05
NO MARK : E-E MODE

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

HS-034SU (SWITCHING REGULATOR) PRINTED WIRING BOARD

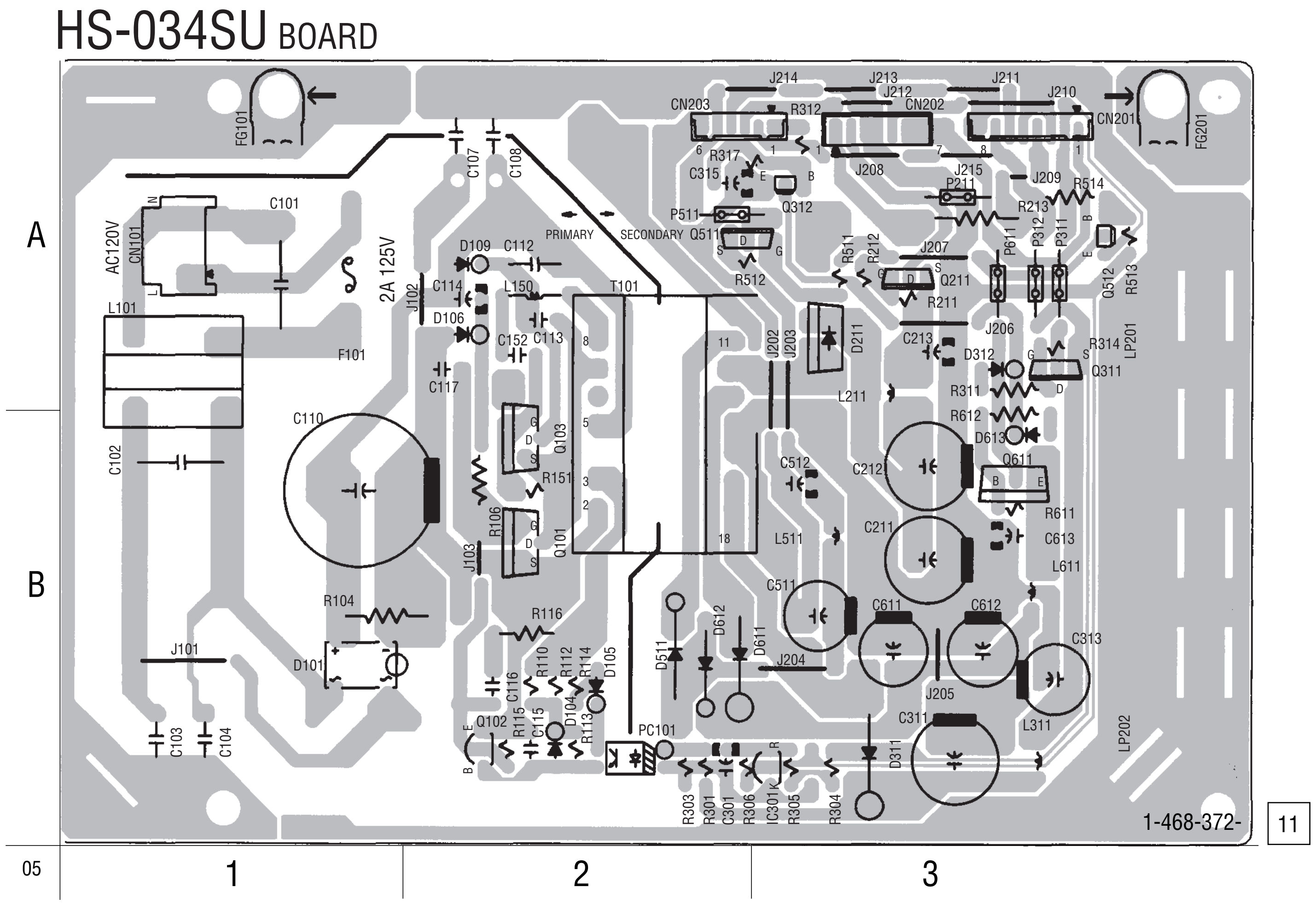
– Ref. No.: HS-034SU board; 6,000 series –

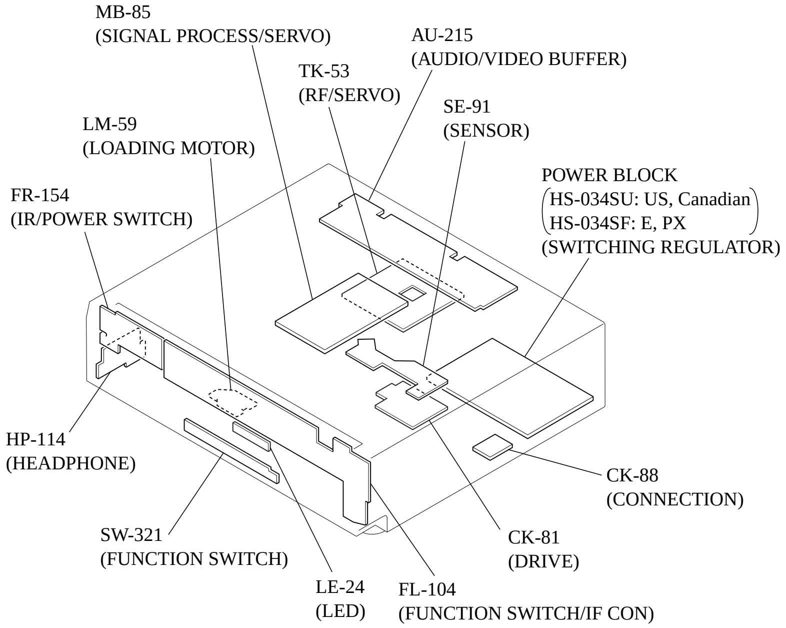
– US, Canadian –

There are few cases that the part isn't mounted in this model is printed on this diagram.

HS-034SU BOARD

CN101	A-1
CN201	A-3
CN202	A-3
CN203	A-2
D101	B-1
D104	B-2
D105	B-2
D106	A-2
D109	A-2
D211	A-3
D311	B-3
D312	A-3
D511	B-2
D611	B-2
D612	B-2
D613	B-3
IC301	B-3
Q101	B-2
Q102	B-2
Q103	B-2
Q211	A-3
Q311	A-3
Q312	A-3
Q511	A-2
Q512	A-3
Q611	B-3

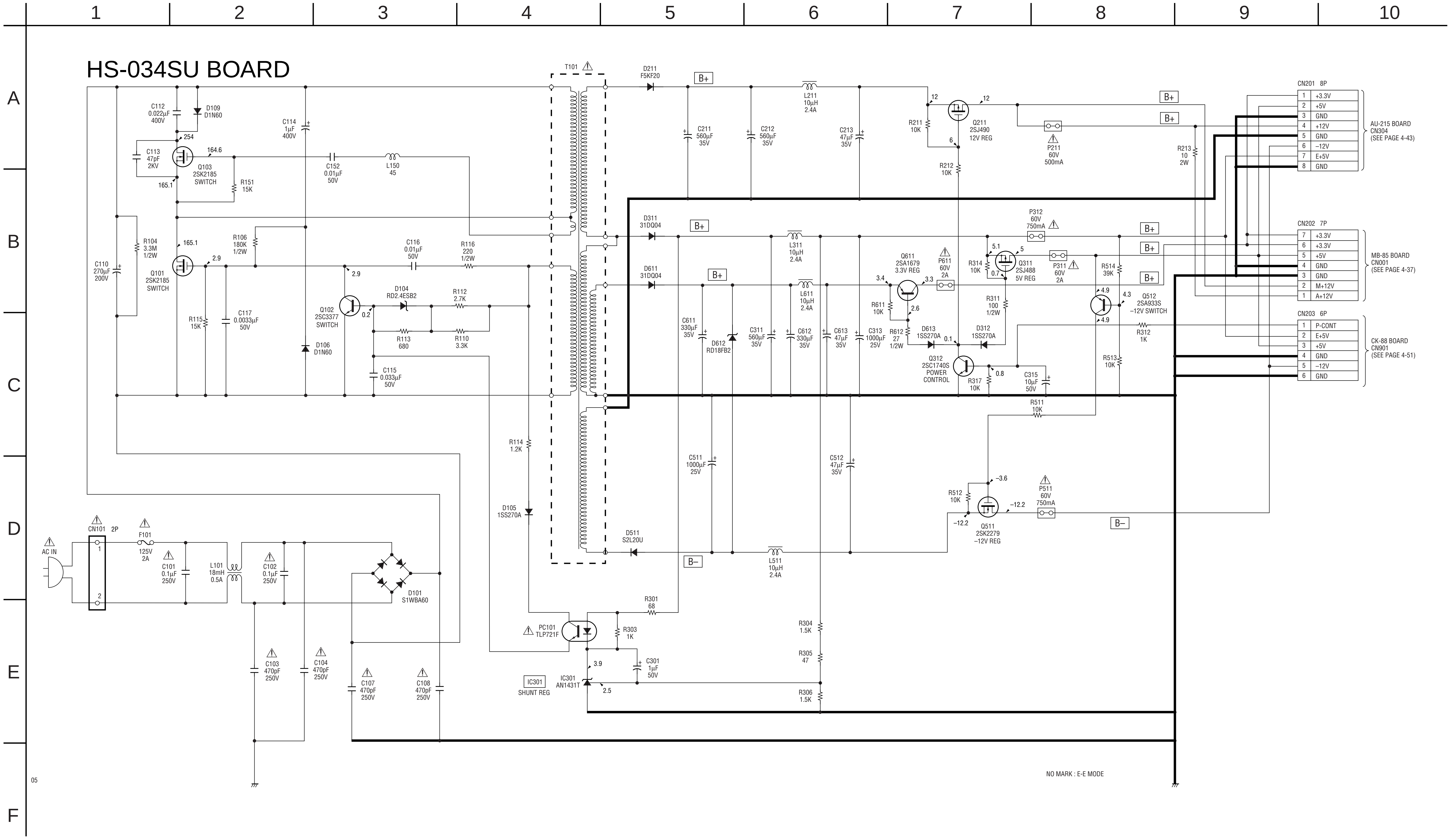

HS-034SU BOARD
A
B
1
2
3
05
AC120V
CN101
L101
C101
C102
F101
2A 125V
C110
R104
J101
D101
C103
C104
FG101
C107
C108
PRIMARY
SECONDARY
T101
D109
C112
C114
L150
D106
C152
C113
C117
Q103
R151
R106
Q101
J103
R116
Q102
PC101
CN203
R312
CN202
CN201
FG201
J214
J213
J212
J211
J210
R317
C315
Q312
J208
J215
P211
J209
R514
R213
P511
Q511
R512
R511
R212
J207
Q211
R211
P611
P312
P311
Q512
R513
D211
C213
D312
J206
R314
Q311
LP201
L211
R311
R612
D613
C512
C212
Q611
R611
C613
L511
C211
L611
C511
C611
C612
C313
D612
D611
D511
J204
J205
C311
L311
D311
LP202
R303
R301
C301
R306
IC301
R305
R304
1-468-372-
11


MB-85
(SIGNAL PROCESS/SERVO)
AU-215
(AUDIO/VIDEO BUFFER)
TK-53
(RF/SERVO)
SE-91
(SENSOR)
LM-59
(LOADING MOTOR)
FR-154
(IR/POWER SWITCH)
POWER BLOCK
HS-034SU: US, Canadian
HS-034SF: E, PX
(SWITCHING REGULATOR)
HP-114
(HEADPHONE)
CK-88
(CONNECTION)
SW-321
(FUNCTION SWITCH)
CK-81
(DRIVE)
LE-24
(LED)
FL-104
(FUNCTION SWITCH/IF CON)

HS-034SU (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: HS-034SU board; 6,000 series –

– US, Canadian –


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
HS-034SU BOARD
T101 ⚠
D211 F5KF20
B+
L211 10μH 2.4A
C211 560μF 35V
C212 560μF 35V
C213 47μF 35V
R211 10K
12
Q211 2SJ490 12V REG
6
R212 10K
P211 60V 500mA
R213 10 2W
CN201 8P
1 +3.3V
2 +5V
3 GND
4 +12V
5 GND
6 −12V
7 E+5V
8 GND
AU-215 BOARD CN304 (SEE PAGE 4-43)
C112 0.022μF 400V
D109 D1N60
C114 1μF 400V
254
C113 47pF 2KV
164.6
Q103 2SK2185 SWITCH
165.1
R151 15K
C152 0.01μF 50V
L150 45
D311 31DQ04
L311 10μH 2.4A
P312 60V 750mA ⚠
Q611 2SA1679 3.3V REG
P611 60V 2A
R314 10K
5.1
Q311 2SJ488 5V REG
0.7
P311 60V 2A
R514 39K
CN202 7P
7 +3.3V
6 +3.3V
5 +5V
4 GND
3 GND
2 M+12V
1 A+12V
MB-85 BOARD CN001 (SEE PAGE 4-37)
C110 270μF 200V
R104 3.3M 1/2W
Q101 2SK2185 SWITCH
165.1
2.9
R106 180K 1/2W
C116 0.01μF 50V
R116 220 1/2W
D611 31DQ04
L611 10μH 2.4A
3.4
3.3
2.6
R611 10K
R311 100 1/2W
4.9
4.3
Q512 2SA933S −12V SWITCH
R312 1K
R115 15K
C117 0.0033μF 50V
Q102 2SC3377 SWITCH
0.2
2.9
D104 RD2.4ESB2
R112 2.7K
R113 680
R110 3.3K
D106 D1N60
C115 0.033μF 50V
C611 330μF 35V
D612 RD18FB2
C311 560μF 35V
C612 330μF 35V
C613 47μF 35V
C313 1000μF 25V
R612 27 1/2W
D613 1SS270A
0.1
D312 1SS270A
Q312 2SC1740S POWER CONTROL
R317 10K
0.8
C315 10μF 50V
R513 10K
CN203 6P
1 P-CONT
2 E+5V
3 +5V
4 GND
5 −12V
6 GND
CK-88 BOARD CN901 (SEE PAGE 4-51)
R511 10K
R114 1.2K
C511 1000μF 25V
C512 47μF 35V
R512 10K
−3.6
P511 60V 750mA
−12.2
−12.2
Q511 2SK2279 −12V REG
B−
D105 1SS270A
D511 S2L20U
L511 10μH 2.4A
CN101 2P
AC IN
F101 125V 2A
C101 0.1μF 250V
L101 18mH 0.5A
C102 0.1μF 250V
D101 S1WBA60
R301 68
PC101 TLP721F
R303 1K
R304 1.5K
R305 47
R306 1.5K
C103 470pF 250V
C104 470pF 250V
C107 470pF 250V
C108 470pF 250V
IC301 SHUNT REG
IC301 AN1431T
3.9
2.5
C301 1μF 50V
05
NO MARK : E-E MODE

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-85 BOARD IC202)

Pin No.	Pin name	I/O	Function
1	PB5	O	Analog filter gain control
2	PB6	O	VES gain control “H”: VES
3	PB7	O	Rear CH boost control “H”: rear boost
4	VCC3	-	Power supply
5	CLK	O	CPU clock out (25 MHz)
6	$\overline{\mathrm{CS5}}$	O	Not used
7	$\overline{\mathrm{CS4}}$	O	Chip select signal for ARP, SERVO DSP and HGA
8	$\overline{\mathrm{CS3}}$	O	Chip select signal for SDRAM and AV DEC
9	$\overline{\mathrm{CS2}}$	O	Chip select signal for REG and AV DEC
10	$\overline{\mathrm{CS1}}$	O	Chip select signal for external SRAM
11	$\overline{\mathrm{CS0}}$	O	Chip select signal for external FLASH ROM
12	$\overline{\mathrm{NMI}}$	I	Not used (fixed at “H”)
13	$\overline{\mathrm{HST}}$	I	Not used (fixed at “H”)
14	$\overline{\mathrm{RST}}$	I	Reset signal input from IF CON
15	GND	-	Ground
16	MD0	I	Input of mode select 0 (fixed at “1”)
17	MD1	I	Input of mode select 1 (fixed at “0”)
18	MD2	I	Input of mode select 2 (fixed at “0”)
19	RDY	I	Wait signal input
20	P81	I	Test terminal (fixed at “H”)
21	P82	I	Test terminal (fixed at “L”)
22	$\overline{\mathrm{RD}}$	O	Read enable signal output
23	$\overline{\mathrm{WR0}}$	O	High byte write enable signal output (16 bit and 8 bit)
24	$\overline{\mathrm{WR1}}$	O	Low byte write enable signal output (16 bit only)
25-32	D16-D23	I/O	Data bus D0-D7 (16 bit)
33-39	D24-D30	I/O	Data bus D8-D14 (16 bit), D0-D6 (8 bit)
40	GND	-	Ground
41	D31	I/O	Data bus D15 (16 bit), D7 (8 bit)
42	A00	O	Address bus A0
43	VCC5	-	Power supply
44-64	A01-A21	O	Address bus A1-A21
65	GND	-	Ground
66	P66	O	PLL IC control output “H”: DOUBLE
67	P67	I	DIAG mode signal input “L”: DIAG
68	EOP0	I	Not used
69	AVCC	-	Power supply
70	AVRH	-	Reference power supply (+3.3V)
71	AGND	-	Ground
72	AN0	I	Set of mode 0
73	AN1	I	Set of mode 1
74	AN2	I	Set of mode 2
75	AN3	I	Set of mode 3 (fixed at “H”)
76	SI0	I	Serial data input from IF CON and EEPROM
77	SO0	O	Serial data output to IF CON and EEPROM
78	SC0	O	Serial clock output to IF CON and EEPROM
79	SI1	I	Serial bus 1 (for data input)
80	SO1	O	Serial bus 1 (for data output)
81	SI2	I	Serial bus 2 (for data input)
82	SO2	O	Serial bus 2 (for data output)
83	PF7	O	Reset signal output
84	DACK1	O	Output of DMA-ACK 0 to AV DEC
85	DACK0	O	Output of DMA-ACK 1 to AV DEC
86	DREQ1	I	Input of DMA-REQ 0 from AV DEC
87	DREQ0	I	Input of DMA-REQ 1 from AV DEC
88	INT3	I	Input of interrupt from HGA
89	SC1	O	Serial clock output
90	GND	-	Ground
91	X1	O	Clock output (12.5MHz)
92	X0	I	Clock input (12.5MHz)
93	VCC5	-	Power supply
94	INT1	I	Input of interrupt ARP and SERVO DSP
95	INT0	I	Input of interrupt from AV DEC
96	PB0	I	Rear panel lime input select (“H”: DISC “L”: EXT)
97	PB1	O	Chip select signal to IF CON
98	PB2	O	Chip select signal to DAC (Lt and Rt)
99	PB3	O	Chip select signal to DAC (L and R)
100	PB4	O	DVD/CD select (“H”: 44.1kHz “L”: 48kHz)

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press TITLE, CLEAR, POWER buttons on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the POWER button.

```
Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
Exit: Power Key
_
Model    : DPX12xxxx
Revision: 1.xxxx
```

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press 0 key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

Diag All Check
No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx



Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press NEXT key to go to the next item, or PREV key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press STOP or ENTER key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###




 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press STOP key to quit the diagnosis, or PREV key to repeat the same item where an error occurred, or NEXT key to continue the check from the item next to faulty item.

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if “5. Supply” is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see “Check Items List”.

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC205) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
The 8-bit data are added at addresses 0x000F0000 ~ 0x002EFFFF of ROM (IC205) and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from EEPROM (IC201) is displayed with 2-digit hexadecimal number.

	Model Type	
DVP-C650D (US, Canadian)	6	0
DVP-C650D (E)	6	1
DVP-C653D (PX)	6	0

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data 0x00~0xFF are written to the address 0xF of GA (IC601), then read and checked if they accord.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
Data 0x9249, 0x2942, 0x4294 are written to addresses 0x00~0xFF of EEPROM (IC201), then read and checked. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-4) NAND Flash Check
Data clear → write → read, and accord check
Error 04: Clear error
05: Write error
06: Read data discord
21: Faulty blocks exceed 10
The data clear, write, read, and check are executed to the block 0 of Flash memory (IC602).
In case of a faulty block, its address is displayed.
An error is output if faulty blocks exceed 10.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
Data 0x9249, 0x2942, 0x4294 are written to the address 0x602 of RAM in the Servo DSP (IC701), then read and checked.

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.

Caution: Do not conduct this test with a mechanical deck connected.
The maximum voltage is applied to the Servo Driver IC (IC801, IC802). If mechanical deck is connected, the motor and optics could be damaged. Disconnect mechanical deck following the output message, then enter specified 4- or 5-digit number from the remote commander, and press the ENTER. The test is conducted only when the input data accord. Check the output level, then press the NEXT to finish the test.
This test is skipped if “All” is selected.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-85 board. Also, disconnect harness from the CN011.

5. Supply

Caution: Do not conduct this check with a mechanical deck connected.
An access is made to the stream supply and servo control IC (IC303) and external RAM (IC304) using check data. If mechanical deck is connected, the motor and optics could be damaged. This check is also executed by the “All” menu item.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-85 board. Also, disconnect harness from the CN011.

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF are written to the TMAX register (address 0xC6) in ARP (IC303), then they are read and checked.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus

Data write → other address read discord check

Error 10: ARP → RAM address bus error

Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).

Before starting the test, all addresses of RAM (IC304) are cleared to 0x0000.

First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###




 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check

Data write → read, and accord check

Error 11: ARP RAM read data discord

The program code data stored in ROM are copied to all areas of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM

Data write → read, and accord check

Error 13: AVD RAM read data discord

The program code data stored in ROM (IC205) are copied to all areas of RAM (IC402, IC403) connected to the AVD (IC401) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

(6-3) 1930 SP

ROM → AVD RAM → Video OUT

Error: Not detected.

The data including sub picture streams in ROM (IC205) are transferred to the RAM (IC402, IC403) in AVD (IC401), and output as video signals from the AVD (IC401).

They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar

AVD color bar command write → Video OUT

Error: Not detected.

The command is transferred to the AVD, and the color bar signals are output from video terminals.

They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

8. Audio

(8-2) ARP → 1930

Error 14: ARP → 1930 video NG

15 : ARP → 1930 audio NG

(8-3) Test Tone

A pink noise signal is output from the AVD (IC401) through optical coaxial digital terminal and analog audio terminal.

Error: Not detected.

All channels → 2ch Left → 2ch Right → Front Left → Front Right → Rear Left → Rear Right → Center → Sub Woofer are checked in this order.

Note: Sub Woofer is checked only for low-frequency components, and no sound will be heard unless a proper super woofer is connected.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check
(3-4) NAND Flash Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone

Error Codes List
00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press 1 key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. SACD



                  Exit: RETURN
```

Normally, 0 is selected to adjust DVD (single layer), CD, DVD (dual layer), and SACD in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen.
The disc used for adjustment must be the one specified for adjustment. However, for SACD disc, use the player with initial data if the disc is not available.

0. ALL

Select 0, insert each disc (1. DVD-SL, 2. CD, 3. DVD-SL, 4. SACD) to table from No.1 to No. 4 and press ENTER key, and the servo set data in EEPROM will be initialized. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. SACD disc are adjusted in this order. Though the message to confirm whether discs other than SACD disc are adjusted is not displayed, you can finish the adjustment if pressing the STOP button. During adjustment of each disc, the measurement for disc type judgment is made. As automatic adjustment does not judge the disc type unlike conventional models, take care not to insert wrong type discs. Also, do not give a shock during adjustment.

1. DVD-SL (single layer)

Select 1, insert DVD single layer disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Wait 300 msec
4. Set Disc Type SL
5. LD ON
6. Spdl Start
7. Wait 1 sec
8. Focus Servo ON 0
9. Auto Track Offset Adjust
10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. Wait 1 sec
14. Sled ON
15. Check CLV Lock
16. Auto LFO Adjust
17. Auto Focus Offset Adjust
18. Auto Tilt Position Adjust
19. Auto Focus Gain Adjust
20. Auto Focus Offset Adjust
21. EQ Boost Adjust
22. Auto LFO Adjust
23. Auto Track Gain Adjust
    Search Check
24. 32Tj Fwd
25. 32Tj Rev
26. 500Tj Fwd
27. 500Tj Rev

28. All Servo Stop
29. Eep Copy Loop Filter Offset

2. CD

Select 2, insert CD disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Rest
2. Disc Check Memory CD
3. Wait 500 msec
4. Set Disc Type CD
5. LD ON
6. Spdl Start
7. Wait 500 msec
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. (TC Display Start)
14. Wait 1 sec
15. Jitter Display Start
16. Sled ON
17. Check CLV ON
18. Auto LFO Adjust
19. Auto Focus Offset Adjust
20.
21. Auto Focus Gain Adjust
22. Auto Focus Offset Adjust
23. Eq Boost Adjust
24. Auto LFO Adjust
25. Auto Track Gain Adjust
    Search Check
26. 32Tj Fwd
27. 32Tj Rev
28. 500Tj Fwd
29. 500Tj Rev

30. All Servo Stop

3. DVD-DL (dual layer)

Select 3, insert DVD dual layer disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Wait 500 msec
4. Set Disc Type DL
5. LD ON
6. Spdl Start
7. Wait 1 sec
    Layer 1 Adjust
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. Clva ON
11. Wait 500 msec
12. Tracking ON
13. Wait 500 msec
14. Sled ON
15. Check CLV Lock
16. Auto Loop Filter Offset Auto Focus Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto Loop Filter Offset
22. Auto Track Gain Adjust
    Search Check
23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev
    Layer 0 Adjust
27. Fj (L1 -> L0)
28. Auto Track Offset Adjust L0

29. Clva ON
30. Wait 500 msec
31. Tracking ON
32. Wait 500 msec
33. Sled ON
34. Check CLV Lock
35. Auto Focus Filter Offset
36. Auto Focus Adjust
37.
38. Auto Focus Gain Adjust
39. Auto Focus Offset Adjust
40. Eq Boost Adjust
41. Auto Loop Filter Offset
42. Auto Track Gain Adjust
    Search Check
43. 32Tj Fwd
44. 32Tj Rev
45. 500Tj fwd
46. 500Tj Rev
    Layer Jump Check
47. Lj (L0 -> L1)
48. Lj (L1 -> L0)

49. All Servo Stop

4. SACD

Select 4, insert SACD disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. However, if SACD disc is not available, use the player with initial data, skipping the SACD adjustment. In this case, you can finish the adjustment if pressing the STOP button.

SACD Adjustment Steps
1. Sled Tilt Reset
2. Set Disc Type CD
3. LD ON
4. Spdl Start
5. Wait 500 msec
6. Focus Servo ON 0
7. Auto track Offset Adjust
8.
9. CLVA ON
10. Wait 500 msec
11. Tracking ON
12. Wait 1 sec
13. Sled ON
14. Check CLV ON
15. Auto Focus Offset Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto LFO Adjust
22. Auto Track Gain Adjust

23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev

27. All Servo Stop */

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select 2, and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
 ## Drive Manual Operation ##

        Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

              Exit: Return
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform “Reset SLED TILT” by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the STOP button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

POWER	Power OFF
STOP	Servo stop
OPEN/CLOSE	Stop+Eject/Loading
RETURN	Return to Operation Menu or Test Mode Menu
NEXT, PREV	Transition between sub modes of menu
1 to 9, 0	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
            Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check




0. Reset SLED TILT
```

On this screen, the mirror time is measured to judge the disc and it is written to the EEPROM. First load DVD SL disc and press [1], next load CD disc and press [2], and finally load DVD DL disc and press [3].
The adjustment must be executed more than once after default data were written. External vibration or shock to the player must not be given. Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F.
Check that the value of CD is larger than that of DVD.
When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
                          EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry “Disc Check Memory”. Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm     ___
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
        SA.       SI.     EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
         TC.——:——:—— EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

[0] Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1] Disk Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
           Servo Control
1. LD         Off R.Sled FWD
2. SP         Off L.Sled REV
3. Focus      Off
4. TRK.       Off
5. Sled       Off
6. CLVA       Off
7. FCS. Srch  Off


0. Reset SLED TILT
        SA.—————SI.—— EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0	Reset SLED TILT	Reset the Sled and Tilt to initial position.
1	LD	Turn ON/OFF the laser.
2	SP	Turn ON/OFF the spindle.
3	Focus	Search the focus and turn on the focus.
4	TRK	Turn ON/OFF the tracking servo.
5	Sled	Turn ON/OFF the sled servo.
6	CLVA	Turn ON/OFF normal servo of spindle servo.
7	FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→	Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
←	Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.
↑	Tilt UP	Move the tilt upward.
↓	Tilt DOWN	Move the tilt downward.

The following menus are normally not used.

3. Track/Layer Jump

4. Manual Adjustment

5. Auto Adjustment

The persons who do not know well about these menus should not use them.

6. Memory Check

```
EEPROM DATA
              CD       – DVD –
ID No. 00     SACD     SL  L0  L1
Focus Gain    xx xx    xx  xx  xx
TRK. Gain     xx xx    xx  xx  xx
Focus Offset  xx xx    xx  xx  xx
TRK. Offset   xx xx    xx  xx  xx
L. F. Offset  xx xx    xx  xx  xx
EQ Boost      xx xx    xx  xx  xx
Jitter        xx xx    xx  xx  xx
Mirror Time   xx xx    xx  xx  xx
_
CLEAR: Default Set
```

This screen displays current servo adjusted data stored in the EEPROM. Though adjusted data can be initialized with the CLEAR key, they cannot be restored after initialization.
So, before clearing, make a note of the adjusted data.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING

```
       ### Mecha Aging ###



Press OPEN key




Abort: STOP key

```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9   Scroll: UP/DOWN
(1: Last EMG.)   Exit: Return
```

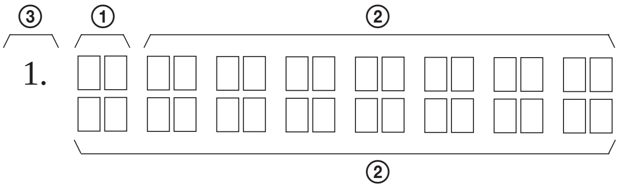
On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours
◎ Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history
◎ Press TITLE and CLEAR keys in this order.
Initializing set up data
◎ Press DVD MENU and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History

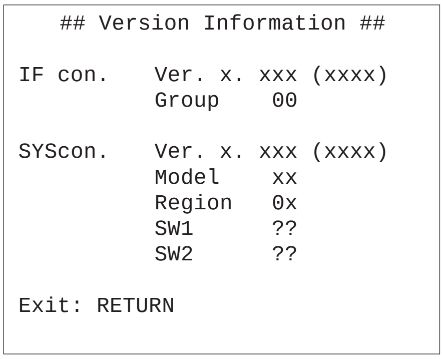


① : Emergency Code
② : Don’t Care
These codes are used for verification of software designing.
③ : Historical order 1 to 9

Emergency Codes List

10: Communication to IC001 (TK-53 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC201 (MB-85 board) failed.
13: Writing of hours meter data to EEPROM, IC201 (MB-85 board) failed.
14: Communication to Servo DSP IC701 (MB-85 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION



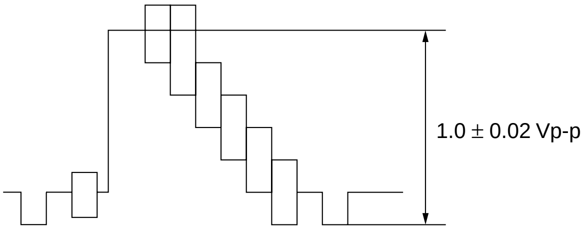
```
   ## Version Information ##

IF con.    Ver. x. xxx (xxxx)
           Group    00

SYScon.    Ver. x. xxx (xxxx)
           Model    xx
           Region   0x
           SW1      ??
           SW2      ??

Exit: RETURN
```

On the Test Mode Menu screen, selecting $\boxed{5}$ displays the ROM version and region code.
The parenthesized hexadecimal number in version field is checksum value of ROM.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting $\boxed{6}$ displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point	: LINE OUT VIDEO (75 Ω terminating resistance)
Measuring instrument	: Oscilloscope
Adjustment device	: RV401 on MB-85 board
Specified value	: 1.0 ± 0.02 Vpp



SECTION 7
ELECTRICAL ADJUSTMENTS

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D112A)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer)
   HLX-503 (J-6090-069-A) (single layer)
   HLX-504 (J-6090-088-A) (single layer)
   HLX-505 (J-6090-089-A) (dual layer)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)

7-1. POWER SUPPLY ADJUSTMENT

1. Power Supply Check (HS-034SF/034SU BOARD)

Mode	E-E
Instrument	Digital voltmeter
+5 V Check	
Test point	CN202 pin ⑤
Specification	5.0 ± 0.2 Vdc
+3.3 V Check	
Test point	CN202 pin ⑦
Specification	3.3 ± 0.2 Vdc
EVER+5 V Check	
Test point	CN203 pin ②
Specification	5.0 ± 0.2 Vdc
P_CONT Check	
Test point	CN203 pin ①
Specification	4V – 5 Vdc
A +12 V Check	
Test point	CN202 pin ①
Specification	$9.5^{+1.5}_{-0.5}$ Vdc
–12 V Check	
Test point	CN203 pin ⑤
Specification	–12.0 ± 1.0 Vdc
M +12 V Check	
Test point	CN202 pin ②
Specification	12.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-85 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV401
Specification	1.0 ± 0.02 Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV401 to attain 1.0 ± 0.02 Vp-p.

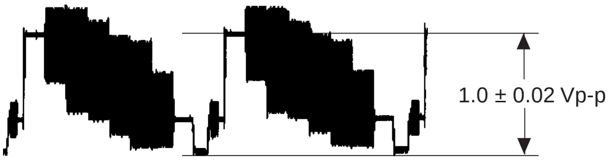


Figure 7-1

2. S-terminal Output Check (MB-85 BOARD)

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.1 Vp-p.

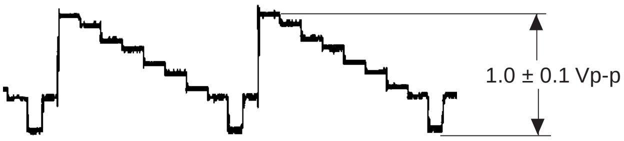


Figure 7-2

3. Checking Component Video Output B-Y (MB-85 BOARD)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (B-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the B-Y level is 700 ± 70 mVp-p.

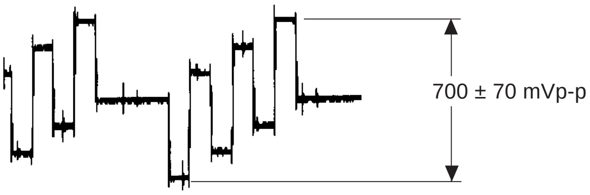


Figure 7-3

4. Checking Component Video Output R-Y (MB-85 BOARD)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (R-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the R-Y level is 700 ± 70 mVp-p.

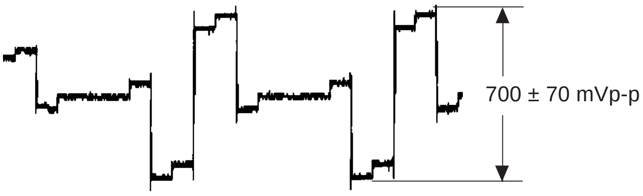


Figure 7-4

5. Checking Component Video Output Y (MB-85 BOARD)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) Confirm that the Y level is 1.0 ± 0.1 Vp-p.

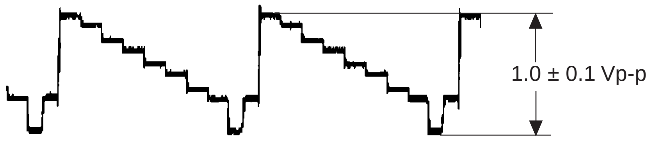


Figure 7-5

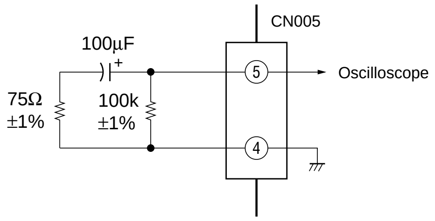
6. Checking S Video Output S-C (MB-85 BOARD)

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	CN005 pin ⑤
Instrument	Oscilloscope
Specification	286 ± 50 mVp-p

Connection:



Checking method:

1) Confirm that the S-C burst is 286 ± 50 mVp-p.

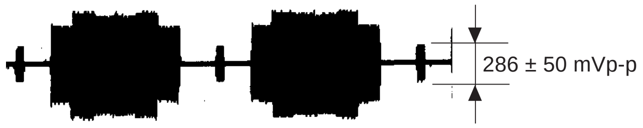
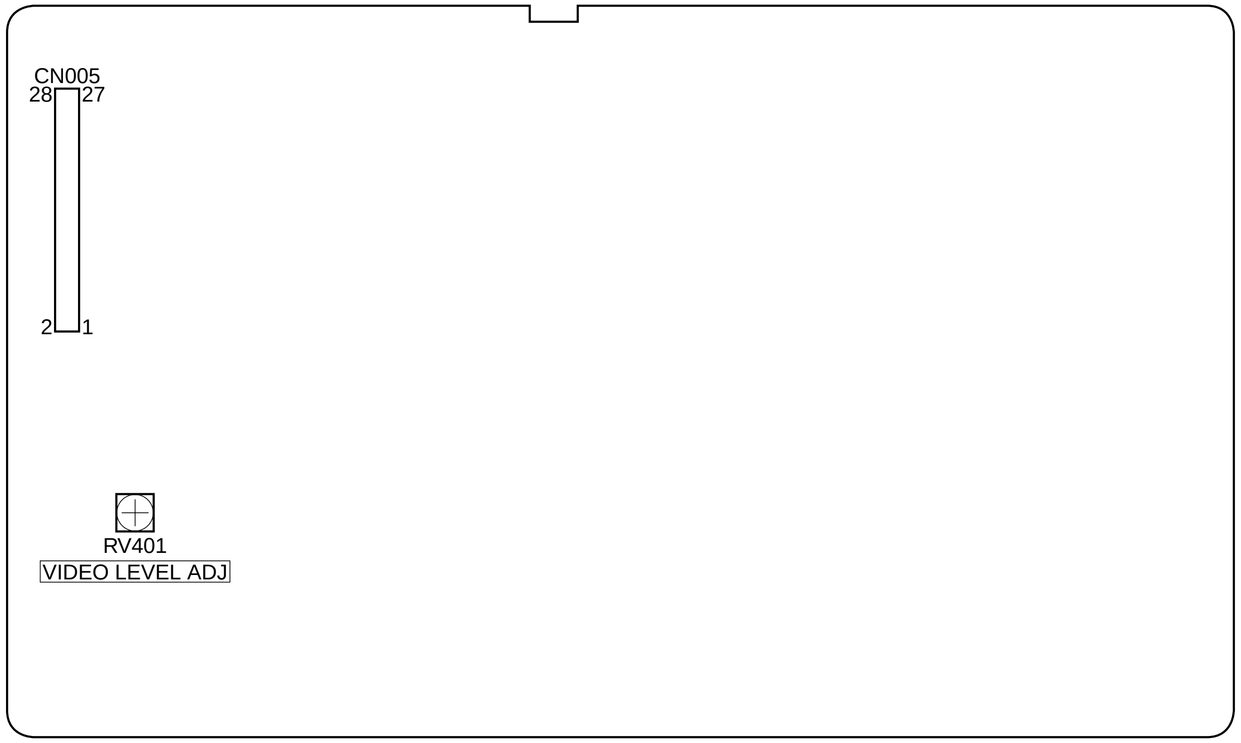


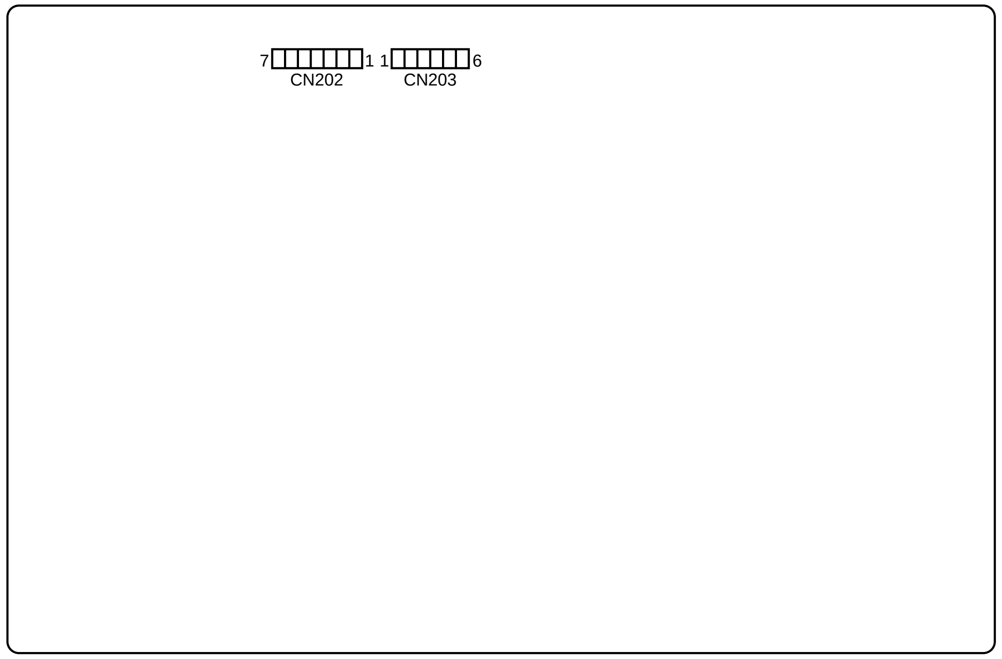
Figure 7-6

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-85 BOARD (SIDE A)



HS-034SF/034SU BOARD (SIDE A)



SECTION 8
REPAIR PARTS LIST

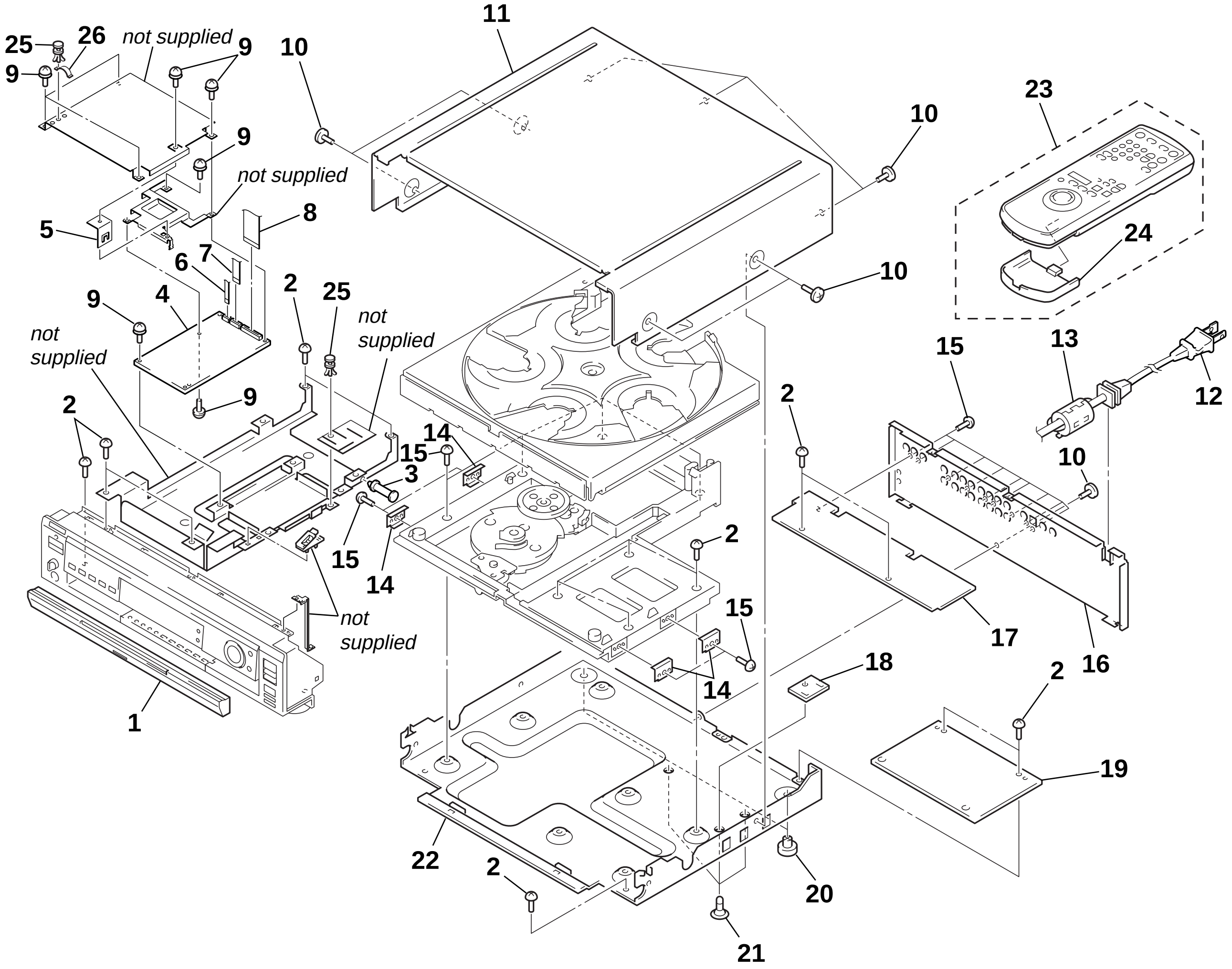
8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

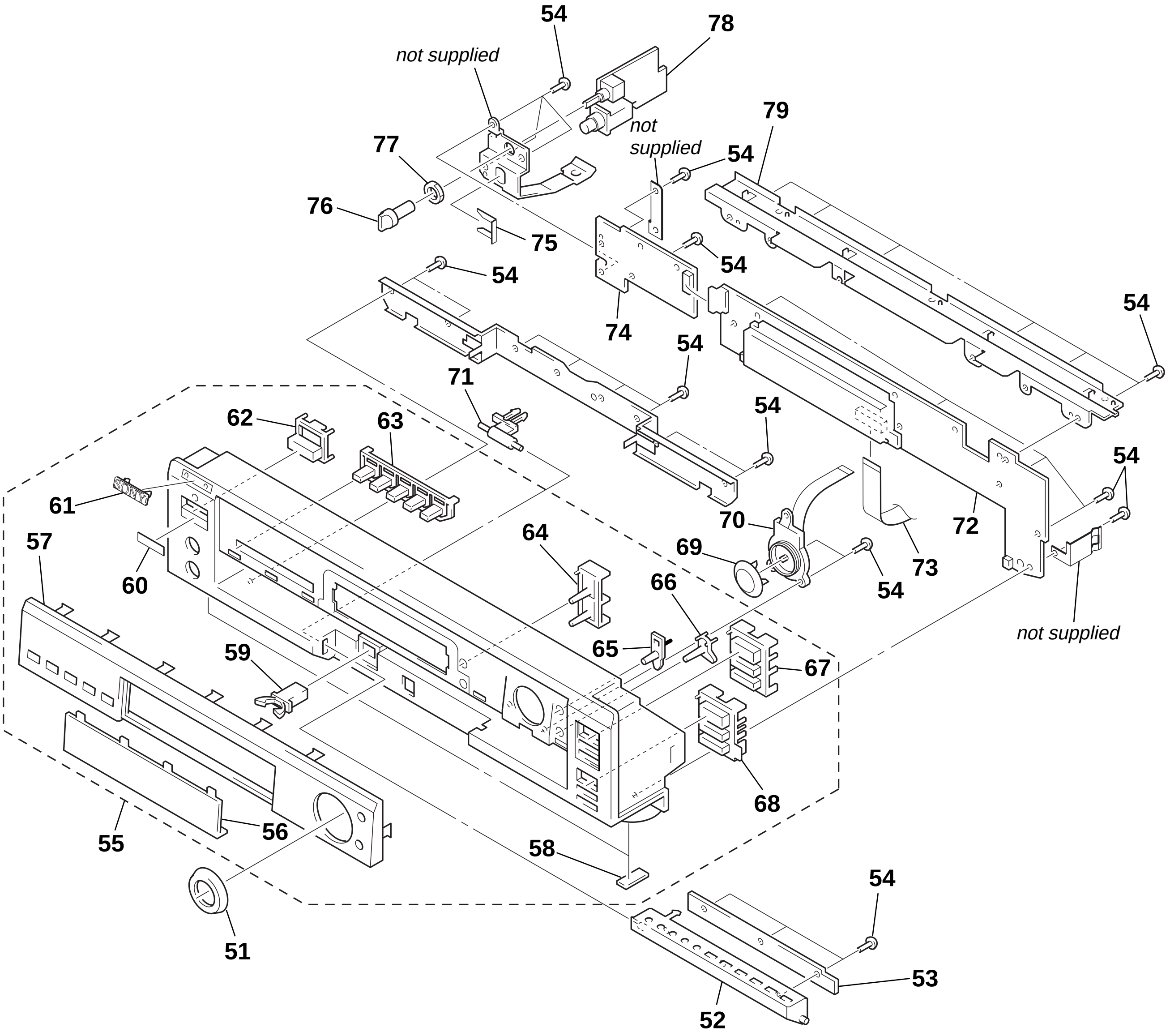
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN ASSEMBLY



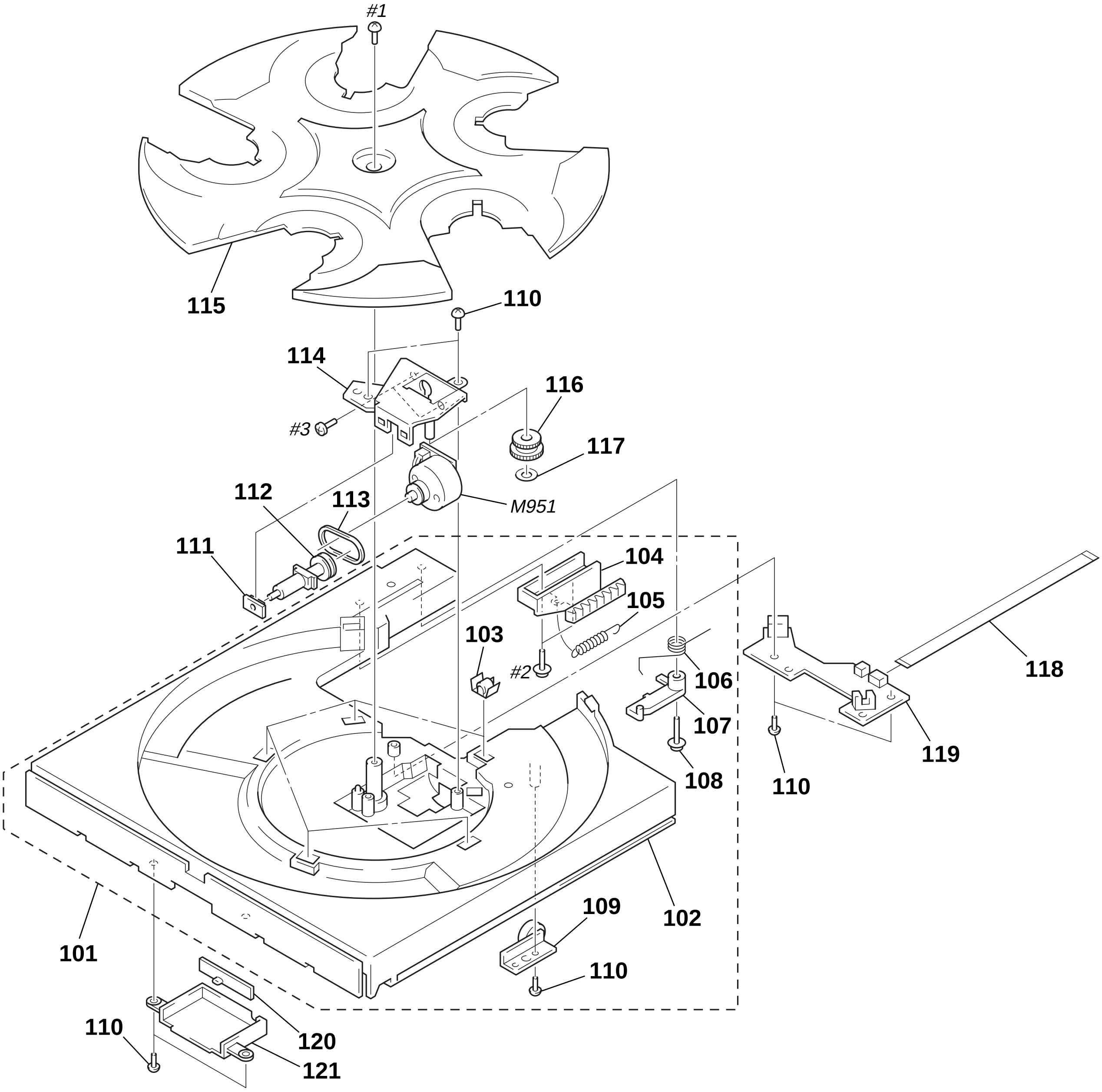
Ref. No.	Part No.	Description	Remark
1	X-3949-804-1	COVER ASSY, TRAY	
2	3-970-608-11	SUMITITE (B3), +BV	
3	3-988-693-11	SPACER, CARD	
* 4	A-6065-334-A	MB-85 BOARD, COMPLETE (EXCEPT E)	
* 4	A-6065-335-A	MB-85 BOARD, COMPLETE (E)	
5	3-054-650-01	SPRING, EMC	
6	1-791-197-11	CABLE, FLEXIBLE FLAT (FMA-14)	
7	1-791-198-11	CABLE, FLEXIBLE FLAT (FMA-15)	
8	1-791-199-11	CABLE, FLEXIBLE FLAT (FMA-16)	
9	3-055-791-01	SUMITITE (B3) (RING), +BV	
10	3-710-901-41	SCREW, TAPPING	
* 11	3-051-081-01	CASE, UPPER	
⚠12	1-782-001-61	CORD, POWER (E, PX)	
⚠12	1-790-155-11	CORD, POWER (US, Canadian)	
13	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
14	4-957-280-31	BRACKET (GUIDE B1)	
15	3-970-608-51	SUMITITE (B3), +BV	
16	3-056-474-01	PANEL, REAR (EXCEPT E)	
16	3-056-474-11	PANEL, REAR (E)	
* 17	A-6065-325-A	AU-215 BOARD, COMPLETE	
* 18	A-6065-336-A	CK-88 BOARD, COMPLETE	
* 19	1-468-372-11	POWER BLOCK (HS-034SU) (US, Canadian)	
* 19	1-468-372-21	POWER BLOCK (HS-034SF) (E, PX)	
20	3-957-819-01	FOOT	
21	3-051-085-01	SPACER (KGLS-RT), ROCKING CARD	
* 22	3-051-059-01	PLATE, BOTTOM	
23	1-418-321-41	COMMANDER, STANDARD (RMT-D112A)	
24	3-055-539-01	LID, BATTERY CASE (for RMT-D112A)	
25	3-531-576-01	RIVET	
26	3-051-301-01	SPRING, SHIELD	

8-1-2. FRONT PANEL ASSEMBLY


54
78
not supplied
79
77
not supplied
54
76
75
54
54
54
74
54
71
54
62
63
54
61
70
72
57
64
69
73
60
66
54
not supplied
59
65
67
68
55
56
58
54
51
53
52

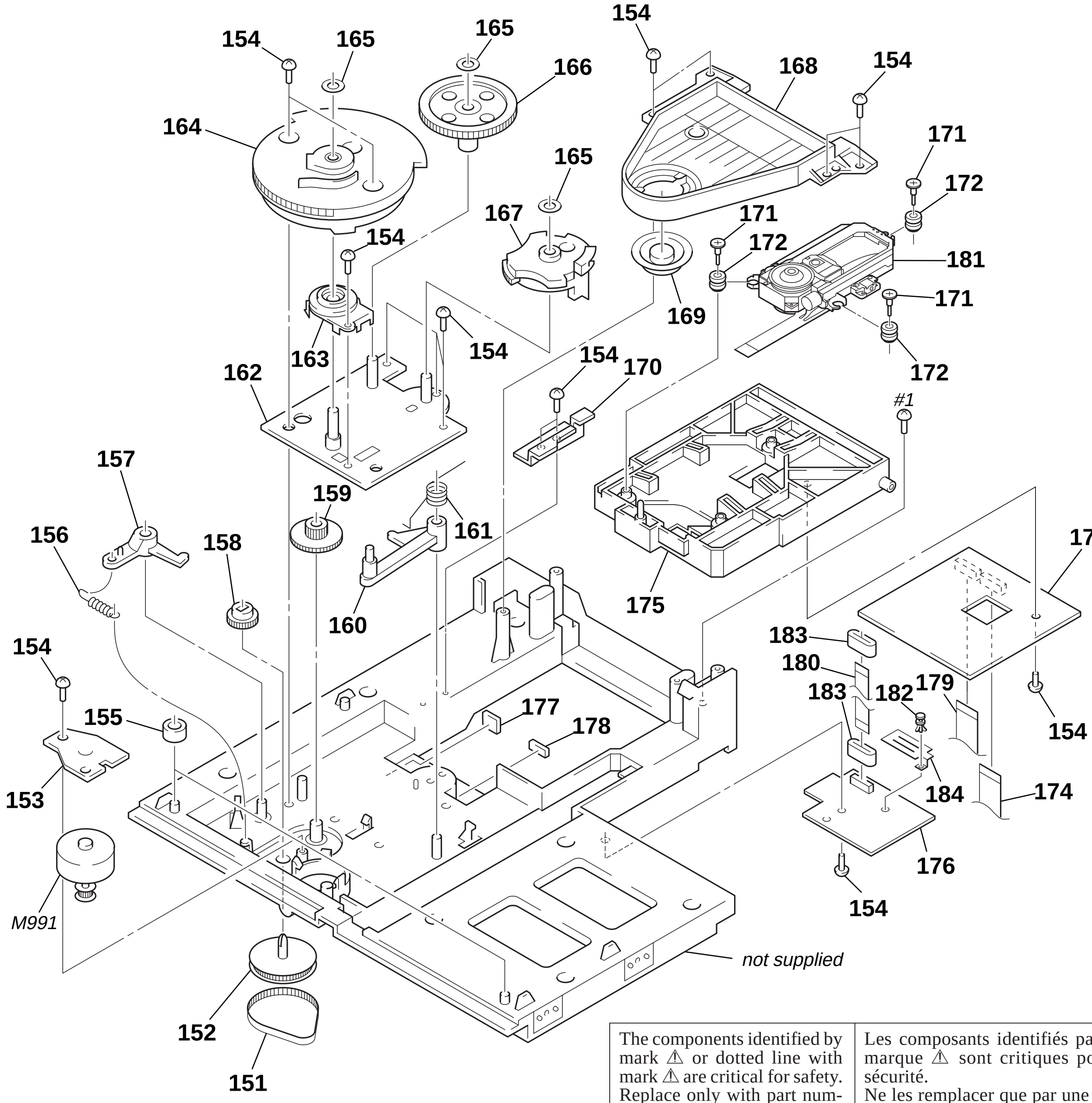
Ref. No.	Part No.	Description	Remark
51	X-3949-294-1	RING ASSY, SHUTTLE	
52	X-3949-806-1	DOOR ASSY, CONTROL	
* 53	A-6065-328-A	SW-321 BOARD, COMPLETE	
54	4-951-620-01	SCREW (2.6X8), +BVTP	
55	X-3949-805-1	PANEL ASSY, FRONT (EXCEPT PX)	
55	X-3949-971-1	PANEL ASSY, FRONT (PX)	
56	3-056-545-01	WINDOW, INDICATION	
57	3-056-539-01	ESCUTCHEON	
58	4-977-598-11	CUSHION	
59	3-056-584-01	LATCH, D. C.	
60	3-974-997-31	WINDOW, REMOTE CONTROL	
61	4-963-404-21	EMBLEM (5-A), SONY	
62	3-988-030-51	BUTTON, POWER	
63	3-056-540-01	BUTTON, DISK SELECT	
64	3-056-541-01	BUTTON, NEXT	
65	3-056-542-01	BUTTON, JOG	
66	X-3949-816-1	BUTTON ASSY, CONTROL	
67	3-056-544-01	BUTTON, PLAY	
68	3-051-069-01	UTTON, EJECT	
69	3-988-016-01	STICK, CURSOR	
70	1-418-097-11	ENCODER, ROTARY (JOG/CURSOR BUTTON)	
71	4-045-250-01	DAMPER	
* 72	A-6065-326-A	FL-104 BOARD, COMPLETE	
73	1-791-201-11	CABLE, FLEXIBLE FLAT (FMF-37)	
* 74	A-6065-327-A	FR-154 BOARD, COMPLETE	
* 75	3-684-436-01	PLATE, MOUNT	
76	3-974-959-11	KNOB, VOLUME	
77	2-118-268-01	NUT (M9), HEXAGON	
* 78	A-6065-329-A	HP-114 BOARD, COMPLETE	
79	3-051-079-04	REINFORCEMENT	

8-1-3. TABLE ASSEMBLY


#1
115
110
114
116
#3
117
112
113
M951
111
104
105
103
#2
106
118
107
119
108
110
109
102
101
110
110
120
121

Ref. No.	Part No.	Description	Remark
101	A-6062-078-A	TABLE (LOADING) ASSY	
102	3-051-084-01	TABLE (LOADING)	
103	X-4947-960-1	ROLLER ASSY	
104	4-957-292-11	SLIDER (RACK)	
105	4-957-294-01	SPRING (D.T), TENSION	
106	4-957-293-01	SPRING (RACK RELEASE)	
107	4-957-291-11	LEVER (RACK RELEASE)	
108	4-957-868-01	SCREW (+PTPWH 2.6X20)	
109	X-4943-480-1	BRACKET (ROLLER D) ASSY	
110	3-970-608-11	SUMITITE (B3), +BV	
* 111	4-957-278-01	BEARING (ROTARY A)	
* 112	X-3948-858-1	GEAR (ROTARY) ASSY	
113	3-051-076-01	BELT (RM)	
114	X-3948-857-1	BRACKET (RM) ASSY	
115	3-056-530-01	TABLE (ROTARY)	
116	3-051-063-01	GEAR (DRIVE)	
117	3-325-697-01	WASHER	
118	1-791-202-11	CABLE, FLEXIBLE FLAT (FCS-4)	
* 119	A-6065-331-A	SE-91 BOARD, COMPLETE	
* 120	A-6065-337-A	LE-24 BOARD, COMPLETE	
121	3-056-550-01	COVER, LED	
M951	A-6062-080-A	MOTOR ASSY, ROTARY (TURN TABLE)	

8-1-4. CHASSIS ASSEMBLY


154
165
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163
154
170
162
172
#1
157
159
161
173
156
158
175
160
183
154
180
183
182
179
155
177
154
178
153
184
174
176
M991
154
not supplied
152
151

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	4-944-490-01	BELT (TIMING)	
152	X-4941-529-1	PULLEY ASSY	
* 153	A-6065-332-A	LM-59 BOARD, COMPLETE	
154	3-970-608-11	SUMITITE (B3), +BV	
* 155	4-951-619-01	CUSHION (A)	
156	4-962-087-01	SPRING (S), TENSION	
157	4-957-285-01	LEVER, SET	
158	4-934-375-31	GEAR (LOADING B)	
159	4-957-303-01	GEAR (LOADING C)	
160	4-957-279-11	LEVER, LOCK	
161	4-957-281-01	SPRING (LOCK LEVER)	
162	X-4943-478-1	BRACKET (GEAR) ASSY	
163	1-466-996-21	ENCODER, ROTARY (LOADING)	
164	4-957-288-01	GEAR (MAIN)	
165	4-957-283-01	WASHER (5), STOPPER	
166	4-957-287-01	GEAR (REV)	
167	4-957-286-11	GEAR (U/D)	
168	3-051-074-01	BRACKET (CP)	

Ref. No.	Part No.	Description	Remark
169	3-056-532-01	PULLEY, CHUCKING	
170	3-051-082-01	STOPPER (BU)	
171	4-981-923-01	SCREW (M), STEP	
172	3-053-847-01	INSULATOR	
* 173	A-6065-333-A	TK-53 BOARD, COMPLETE	
174	1-791-195-11	CABLE, FLEXIBLE FLAT (FTM-8)	
175	3-056-531-01	HOLDER, BU	
* 176	A-6065-330-A	CK-81 BOARD, COMPLETE	
* 177	4-981-731-01	CUSHION (U/D) L	
* 178	4-981-731-11	CUSHION (U/D) R	
179	1-791-196-11	CABLE, FLEXIBLE FLAT (FTM-9)	
180	1-791-200-11	CABLE, FLEXIBLE FLAT (FMC-13)	
⚠181	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
182	3-531-576-01	RIVET	
183	1-543-950-11	CORE, FERRITE	
184	3-056-592-01	HOLDER, FLEXIBLE	
M991	A-4604-834-A	MOTOR ASSY, LOADING	

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Not all of the parts for POWER BLOCK (HS-034SF/034SU) are listed.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-325-A	AU-215 BOARD, COMPLETE			
		**********************			
		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C302	1-126-926-11	ELECT	1000uF	20%	10V
C303	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C304	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C305	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C306	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C307	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C308	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C309	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C310	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C311	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C314	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C315	1-126-935-11	ELECT	470uF	20%	6.3V
C316	1-104-665-11	ELECT	100uF	20%	10V
C317	1-126-935-11	ELECT	470uF	20%	6.3V
C318	1-104-665-11	ELECT	100uF	20%	10V
C319	1-126-935-11	ELECT	470uF	20%	6.3V
C320	1-104-665-11	ELECT	100uF	20%	10V
C321	1-104-665-11	ELECT	100uF	20%	10V
C322	1-104-665-11	ELECT	100uF	20%	10V
C323	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C324	1-126-935-11	ELECT	470uF	20%	6.3V
C325	1-126-935-11	ELECT	470uF	20%	6.3V
C326	1-104-664-11	ELECT	47uF	20%	16V
C327	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C328	1-104-664-11	ELECT	47uF	20%	16V
C329	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C330	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C331	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C332	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C334	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C335	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C336	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C338	1-104-664-11	ELECT	47uF	20%	16V
C339	1-104-664-11	ELECT	47uF	20%	16V
C342	1-104-664-11	ELECT	47uF	20%	16V
C343	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C344	1-126-960-11	ELECT	1uF	20%	50V
C345	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C346	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C347	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C348	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C349	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C350	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C351	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C352	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C353	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C401	1-104-665-11	ELECT	100uF	20%	10V
C404	1-104-665-11	ELECT	100uF	20%	10V
C431	1-104-664-11	ELECT	47uF	20%	16V
C432	1-104-664-11	ELECT	47uF	20%	16V
C433	1-104-665-11	ELECT	100uF	20%	10V
C434	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C435	1-104-665-11	ELECT	100uF	20%	10V
C436	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C437	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C438	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C439	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C440	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C442	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C443	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C447	1-136-850-11	FILM	0.1uF	5%	63V
C448	1-104-664-11	ELECT	47uF	20%	16V
C449	1-104-664-11	ELECT	47uF	20%	16V
C450	1-136-850-11	FILM	0.1uF	5%	63V
C501	1-104-664-11	ELECT	47uF	20%	16V
C502	1-104-664-11	ELECT	47uF	20%	16V
C503	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C504	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C505	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C506	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C507	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C508	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C509	1-136-850-11	FILM	0.1uF	5%	63V
C512	1-136-850-11	FILM	0.1uF	5%	63V
C513	1-104-664-11	ELECT	47uF	20%	16V
C514	1-104-664-11	ELECT	47uF	20%	16V
C521	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C522	1-163-251-11	CERAMIC CHIP	100PF	5%	50V

Ref. No.	Part No.	Description	Remark
C523	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C524	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C525	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C526	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C541	1-104-664-11	ELECT 47uF 20%	16V
C542	1-104-664-11	ELECT 47uF 20%	16V
C543	1-163-130-00	CERAMIC CHIP 360PF 5%	50V
C544	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V
C545	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C546	1-163-130-00	CERAMIC CHIP 360PF 5%	50V
C547	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V
C548	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C549	1-104-664-11	ELECT 47uF 20%	16V
C550	1-104-664-11	ELECT 47uF 20%	16V
C571	1-104-664-11	ELECT 47uF 20%	16V
C572	1-104-664-11	ELECT 47uF 20%	16V
C573	1-163-130-00	CERAMIC CHIP 360PF 5%	50V
C574	1-163-020-00	CERAMIC CHIP 0.0082uF 10%	50V
C575	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C576	1-163-011-11	CERAMIC CHIP 0.0015uF 10%	50V
C577	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V
C578	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C579	1-104-664-11	ELECT 47uF 20%	16V
C580	1-104-664-11	ELECT 47uF 20%	16V
C581	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
		< CONNECTOR >	
CN301	1-785-698-11	CONNECTOR, FFC/FPC 28P	
CN302	1-785-695-11	CONNECTOR, FFC/FPC 13P	
CN303	1-785-694-11	CONNECTOR, FFC/FPC 7P	
* CN304	1-568-946-11	PIN, CONNECTOR 8P	
* CN401	1-568-941-11	PIN, CONNECTOR 3P	
		< DIODE >	
D301	8-719-988-61	DIODE 1SS355TE-17	
D303	8-719-975-40	DIODE RB411D	
D304	8-719-067-59	DIODE MAZ9120D0LS0-TX/L	
D305	8-719-067-59	DIODE MAZ9120D0LS0-TX/L	
D306	8-719-067-59	DIODE MAZ9120D0LS0-TX/L	
D307	8-719-067-59	DIODE MAZ9120D0LS0-TX/L	
D308	8-719-988-61	DIODE 1SS355TE-17	
D309	8-719-988-61	DIODE 1SS355TE-17	
D310	8-719-988-61	DIODE 1SS355TE-17	
D311	8-719-988-61	DIODE 1SS355TE-17	
D312	8-719-988-61	DIODE 1SS355TE-17	
D401	8-719-988-61	DIODE 1SS355TE-17	
D402	8-719-988-61	DIODE 1SS355TE-17	
D431	8-719-914-44	DIODE DAP202K	
D525	8-719-914-44	DIODE DAP202K	
D551	8-719-914-44	DIODE DAP202K	
D561	8-719-067-59	DIODE MAZ9120D0LS0-TX/L	
D591	8-719-914-44	DIODE DAP202K	
		< EARTH TERMINAL >	
* ET301	1-537-738-21	TERMINAL, EARTH	
* ET302	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB305	1-414-553-11	FERRITE 0uH	
FB306	1-414-553-11	FERRITE 0uH	
FB307	1-414-553-11	FERRITE 0uH	
FB308	1-414-553-11	FERRITE 0uH	
FB310	1-414-553-11	FERRITE 0uH	
FB311	1-414-553-11	FERRITE 0uH	
FB312	1-414-553-11	FERRITE 0uH	
FB313	1-414-553-11	FERRITE 0uH	
FB314	1-414-553-11	FERRITE 0uH	
FB315	1-414-553-11	FERRITE 0uH	
FB316	1-414-553-11	FERRITE 0uH	
FB317	1-414-553-11	FERRITE 0uH	
FB318	1-414-553-11	FERRITE 0uH	
FB319	1-414-553-11	FERRITE 0uH	
FB320	1-414-553-11	FERRITE 0uH	
FB321	1-414-553-11	FERRITE 0uH	
FB322	1-414-553-11	FERRITE 0uH	
FB323	1-414-553-11	FERRITE 0uH	
FB324	1-414-553-11	FERRITE 0uH	
FB325	1-414-553-11	FERRITE 0uH	
FB341	1-414-135-11	FERRITE 0uH	
FB342	1-414-553-11	FERRITE 0uH	
FB401	1-414-553-11	FERRITE 0uH	
FB402	1-414-553-11	FERRITE 0uH	
FB403	1-414-553-11	FERRITE 0uH	
FB404	1-414-553-11	FERRITE 0uH	
FB405	1-414-553-11	FERRITE 0uH	
FB406	1-414-553-11	FERRITE 0uH	
FB407	1-414-553-11	FERRITE 0uH	
FB408	1-414-553-11	FERRITE 0uH	
FB409	1-414-553-11	FERRITE 0uH	
FB561	1-414-553-11	FERRITE 0uH	
FB562	1-414-553-11	FERRITE 0uH	
		< IC >	
IC301	8-759-701-58	IC NJM78M08FA	
IC302	8-759-982-54	IC RC79M09FA	
IC303	8-759-563-79	IC BA7660F-E2	
IC321	8-759-563-79	IC BA7660F-E2	
IC401	8-759-909-71	IC BA4558F	
IC431	8-759-909-71	IC BA4558F	
IC502	8-759-909-71	IC BA4558F	
IC505	8-749-016-00	IC HVE0024	
IC541	8-759-909-71	IC BA4558F	
IC571	8-759-909-71	IC BA4558F	
		< JACK >	
J303	1-793-483-11	JACK, PIN 3P (COMPONENT VIDEO OUT)	
J304	1-793-484-11	JACK, PIN 2P (AUDIO IN)	
J305	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5) (MEGA CONTROL)	
J501	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK)	
J502	1-793-446-21	JACK, PIN 1P (COAXIAL)	
J505	1-694-409-41	TERMINAL BOARD (LINE OUT/S VIDEO OUT)	
J508	1-793-482-11	JACK, PIN 6P (5.1CH OUTPUT)	
		< COIL >	
L301	1-412-953-11	INDUCTOR 15uH	
L302	1-412-953-11	INDUCTOR 15uH	
L303	1-412-953-11	INDUCTOR 15uH	
L304	1-412-953-11	INDUCTOR 15uH	
L305	1-412-953-11	INDUCTOR 15uH	
L306	1-412-953-11	INDUCTOR 15uH	

Ref. No.	Part No.	Description		Remark
L307	1-412-963-11	INDUCTOR	100uH	
L308	1-414-930-21	INDUCTOR	2.2uH	
L321	1-412-963-11	INDUCTOR	100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q301	8-729-424-08	TRANSISTOR	UN2111	
Q303	8-729-216-22	TRANSISTOR	2SA1162	
Q304	8-729-421-19	TRANSISTOR	UN2213	
Q305	8-729-424-08	TRANSISTOR	UN2111	
Q306	8-729-424-08	TRANSISTOR	UN2111	
Q307	8-729-424-08	TRANSISTOR	UN2111	
Q308	8-729-424-08	TRANSISTOR	UN2111	
Q309	8-729-424-08	TRANSISTOR	UN2111	
Q310	8-729-424-08	TRANSISTOR	UN2111	
Q311	8-729-424-08	TRANSISTOR	UN2111	
Q314	8-729-424-08	TRANSISTOR	UN2111	
Q315	8-729-421-19	TRANSISTOR	UN2213	
Q316	8-729-422-27	TRANSISTOR	2SD601A-Q	
Q317	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q318	8-729-422-27	TRANSISTOR	2SD601A-Q	
Q319	8-729-424-08	TRANSISTOR	UN2111	
Q320	8-729-421-19	TRANSISTOR	UN2213	
Q321	8-729-421-19	TRANSISTOR	UN2213	
Q322	8-729-424-08	TRANSISTOR	UN2111	
Q323	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q324	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q341	8-729-422-27	TRANSISTOR	2SD601A-Q	
Q401	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q402	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q403	8-729-424-08	TRANSISTOR	UN2111	
Q404	8-729-421-19	TRANSISTOR	UN2213	
Q431	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q432	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q435	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q436	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q503	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q504	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q543	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q544	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q573	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	
Q574	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO	

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R301	1-216-042-00	METAL CHIP	510	5%	1/10W
R302	1-216-042-00	METAL CHIP	510	5%	1/10W
R303	1-216-042-00	METAL CHIP	510	5%	1/10W
R304	1-216-021-00	METAL CHIP	68	5%	1/10W
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-021-00	METAL CHIP	68	5%	1/10W
R307	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-021-00	METAL CHIP	68	5%	1/10W
R309	1-216-097-91	RES, CHIP	100K	5%	1/10W
R310	1-216-042-00	METAL CHIP	510	5%	1/10W
R311	1-216-042-00	METAL CHIP	510	5%	1/10W
R312	1-216-042-00	METAL CHIP	510	5%	1/10W
R313	1-216-097-91	RES, CHIP	100K	5%	1/10W
R314	1-216-097-91	RES, CHIP	100K	5%	1/10W
R315	1-216-097-91	RES, CHIP	100K	5%	1/10W
R316	1-216-097-91	RES, CHIP	100K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-097-91	RES, CHIP	100K	5%	1/10W
R319	1-216-097-91	RES, CHIP	100K	5%	1/10W
R320	1-216-097-91	RES, CHIP	100K	5%	1/10W
R321	1-216-073-00	METAL CHIP	10K	5%	1/10W
R322	1-216-073-00	METAL CHIP	10K	5%	1/10W
R323	1-216-021-00	METAL CHIP	68	5%	1/10W
R324	1-216-021-00	METAL CHIP	68	5%	1/10W
R325	1-216-021-00	METAL CHIP	68	5%	1/10W
R326	1-216-021-00	METAL CHIP	68	5%	1/10W
R327	1-216-021-00	METAL CHIP	68	5%	1/10W
R328	1-216-021-00	METAL CHIP	68	5%	1/10W
R329	1-216-049-91	RES, CHIP	1K	5%	1/10W
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W
R333	1-216-049-91	RES, CHIP	1K	5%	1/10W
R334	1-216-097-91	RES, CHIP	100K	5%	1/10W
R335	1-216-049-91	RES, CHIP	1K	5%	1/10W
R336	1-216-089-91	RES, CHIP	47K	5%	1/10W
R337	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R338	1-216-073-00	METAL CHIP	10K	5%	1/10W
R339	1-216-001-00	METAL CHIP	10	5%	1/10W
R340	1-216-089-91	RES, CHIP	47K	5%	1/10W
R341	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R342	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R343	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R344	1-216-033-00	METAL CHIP	220	5%	1/10W
R345	1-216-021-00	METAL CHIP	68	5%	1/10W
R346	1-216-025-91	RES, CHIP	100	5%	1/10W
R347	1-216-295-91	SHORT	0		
R348	1-216-295-91	SHORT	0		
R349	1-216-041-00	METAL CHIP	470	5%	1/10W
R350	1-216-041-00	METAL CHIP	470	5%	1/10W
R353	1-216-295-91	SHORT	0		
R355	1-216-295-91	SHORT	0		
R356	1-216-049-91	RES, CHIP	1K	5%	1/10W
R357	1-216-081-00	METAL CHIP	22K	5%	1/10W
R358	1-216-097-91	RES, CHIP	100K	5%	1/10W
R359	1-216-097-91	RES, CHIP	100K	5%	1/10W
R360	1-216-097-91	RES, CHIP	100K	5%	1/10W
R361	1-216-049-91	RES, CHIP	1K	5%	1/10W
R362	1-216-049-91	RES, CHIP	1K	5%	1/10W
R401	1-216-085-00	METAL CHIP	33K	5%	1/10W
R402	1-216-085-00	METAL CHIP	33K	5%	1/10W
R403	1-216-085-00	METAL CHIP	33K	5%	1/10W
R404	1-216-085-00	METAL CHIP	33K	5%	1/10W
R405	1-216-085-00	METAL CHIP	33K	5%	1/10W
R406	1-216-077-91	RES, CHIP	15K	5%	1/10W
R407	1-216-077-91	RES, CHIP	15K	5%	1/10W
R408	1-216-085-00	METAL CHIP	33K	5%	1/10W
R409	1-216-025-91	RES, CHIP	100	5%	1/10W
R410	1-216-025-91	RES, CHIP	100	5%	1/10W
R411	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R412	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R413	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R414	1-216-049-91	RES, CHIP	1K	5%	1/10W
R431	1-216-089-91	RES, CHIP	47K	5%	1/10W
R432	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R433	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R434	1-216-089-91	RES, CHIP	47K	5%	1/10W
R435	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R436	1-216-069-00	METAL CHIP	6.8K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R437	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R438	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R439	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R440	1-216-295-91	SHORT	0		
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R443	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R444	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R445	1-216-049-91	RES, CHIP	1K	5%	1/10W
R446	1-216-047-91	RES, CHIP	820	5%	1/10W
R447	1-216-049-91	RES, CHIP	1K	5%	1/10W
R448	1-216-047-91	RES, CHIP	820	5%	1/10W
R449	1-216-109-00	METAL CHIP	330K	5%	1/10W
R450	1-216-109-00	METAL CHIP	330K	5%	1/10W
R451	1-216-041-00	METAL CHIP	470	5%	1/10W
R452	1-216-041-00	METAL CHIP	470	5%	1/10W
R455	1-216-097-91	RES, CHIP	100K	5%	1/10W
R456	1-216-049-91	RES, CHIP	1K	5%	1/10W
R457	1-216-049-91	RES, CHIP	1K	5%	1/10W
R458	1-216-041-00	METAL CHIP	470	5%	1/10W
R459	1-216-041-00	METAL CHIP	470	5%	1/10W
R460	1-216-041-00	METAL CHIP	470	5%	1/10W
R461	1-216-041-00	METAL CHIP	470	5%	1/10W
R501	1-216-089-91	RES, CHIP	47K	5%	1/10W
R502	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R503	1-216-089-91	RES, CHIP	47K	5%	1/10W
R504	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R510	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R511	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R512	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R513	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R514	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R517	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R519	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R520	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R521	1-216-109-00	METAL CHIP	330K	5%	1/10W
R522	1-216-109-00	METAL CHIP	330K	5%	1/10W
R523	1-216-041-00	METAL CHIP	470	5%	1/10W
R524	1-216-041-00	METAL CHIP	470	5%	1/10W
R525	1-216-049-91	RES, CHIP	1K	5%	1/10W
R526	1-216-025-91	RES, CHIP	100	5%	1/10W
R527	1-216-025-91	RES, CHIP	100	5%	1/10W
R528	1-216-049-91	RES, CHIP	1K	5%	1/10W
R541	1-216-089-91	RES, CHIP	47K	5%	1/10W
R542	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R543	1-216-089-91	RES, CHIP	47K	5%	1/10W
R544	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R545	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R546	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R547	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R548	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R549	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R553	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R555	1-216-109-00	METAL CHIP	330K	5%	1/10W
R556	1-216-109-00	METAL CHIP	330K	5%	1/10W
R557	1-216-041-00	METAL CHIP	470	5%	1/10W
R558	1-216-041-00	METAL CHIP	470	5%	1/10W
R559	1-216-049-91	RES, CHIP	1K	5%	1/10W
R560	1-216-025-91	RES, CHIP	100	5%	1/10W
R561	1-216-025-91	RES, CHIP	100	5%	1/10W
R562	1-216-049-91	RES, CHIP	1K	5%	1/10W
R563	1-216-049-91	RES, CHIP	1K	5%	1/10W
R564	1-216-295-91	SHORT	0		
R569	1-216-295-91	SHORT	0		
R571	1-216-089-91	RES, CHIP	47K	5%	1/10W
R572	1-216-089-91	RES, CHIP	47K	5%	1/10W
R573	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R574	1-216-077-91	RES, CHIP	15K	5%	1/10W
R575	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R576	1-216-077-91	RES, CHIP	15K	5%	1/10W
R577	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R578	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R579	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R580	1-216-079-00	METAL CHIP	18K	5%	1/10W
R585	1-216-109-00	METAL CHIP	330K	5%	1/10W
R586	1-216-109-00	METAL CHIP	330K	5%	1/10W
R587	1-216-041-00	METAL CHIP	470	5%	1/10W
R588	1-216-041-00	METAL CHIP	470	5%	1/10W
R589	1-216-049-91	RES, CHIP	1K	5%	1/10W
R590	1-216-025-91	RES, CHIP	100	5%	1/10W
R591	1-216-025-91	RES, CHIP	100	5%	1/10W
R592	1-216-049-91	RES, CHIP	1K	5%	1/10W
R593	1-216-295-91	SHORT	0		
R598	1-216-295-91	SHORT	0		

< RELAY >

Ref. No.	Part No.	Description
RY301	1-755-041-11	RELAY
RY302	1-755-041-11	RELAY

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* A-6065-330-A CK-81 BOARD, COMPLETE
****
(Ref.No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C652	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C653	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C654	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C655	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C656	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C657	1-128-551-11	ELECT	22uF	20%	25V
C658	1-126-099-11	ELECT	2.2uF	20%	35V
C659	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C660	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C661	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

< CONNECTOR >

Ref. No.	Part No.	Description
CN651	1-770-165-11	CONNECTOR, FFC/FPC 13P
CN656	1-770-638-11	CONNECTOR, FFC/FPC 7P
* CN657	1-568-951-11	PIN, CONNECTOR 2P

< DIODE >

Ref. No.	Part No.	Description
D651	8-719-069-59	DIODE UDZS-TE17-8.2B
D652	8-719-988-61	DIODE 1SS355TE-17

< IC >

Ref. No.	Part No.	Description
IC651	8-759-473-06	IC BU4011BF-E2
IC652	8-759-522-08	IC BA6780FP-Y-E2

< TRANSISTOR >

Ref. No.	Part No.	Description
Q651	8-729-421-22	TRANSISTOR UN2211
Q652	8-729-421-22	TRANSISTOR UN2211

Ref. No.	Part No.	Description			Remark
Q653	8-729-421-22	TRANSISTOR	UN2211		
Q654	8-729-421-22	TRANSISTOR	UN2211		
Q656	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
		< RESISTOR >			
R662	1-216-097-91	RES, CHIP	100K	5%	1/10W
R664	1-216-037-00	METAL CHIP	330	5%	1/10W
R665	1-216-073-00	METAL CHIP	10K	5%	1/10W
R666	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R667	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R668	1-216-075-00	METAL CHIP	12K	5%	1/10W
R669	1-216-081-00	METAL CHIP	22K	5%	1/10W
R670	1-216-081-00	METAL CHIP	22K	5%	1/10W
R671	1-216-081-00	METAL CHIP	22K	5%	1/10W
R672	1-216-081-00	METAL CHIP	22K	5%	1/10W
R673	1-216-081-00	METAL CHIP	22K	5%	1/10W
R674	1-216-081-00	METAL CHIP	22K	5%	1/10W
R675	1-216-081-00	METAL CHIP	22K	5%	1/10W
R676	1-216-081-00	METAL CHIP	22K	5%	1/10W
R677	1-219-397-11	RES, CHIP	1.8	5%	1/8W
R678	1-219-397-11	RES, CHIP	1.8	5%	1/8W
R679	1-219-397-11	RES, CHIP	1.8	5%	1/8W
R681	1-216-049-91	RES, CHIP	1K	5%	1/10W
R682	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R683	1-216-073-00	METAL CHIP	10K	5%	1/10W
R684	1-216-049-91	RES, CHIP	1K	5%	1/10W
R685	1-216-075-00	METAL CHIP	12K	5%	1/10W
R686	1-216-073-00	METAL CHIP	10K	5%	1/10W
R687	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R688	1-216-295-91	SHORT	0		
*	A-6065-336-A	CK-88 BOARD, COMPLETE **********************			(Ref.No. 2,000 Series)
		< CONNECTOR >			
* CN901	1-568-955-11	PIN, CONNECTOR 6P			
* CN902	1-568-934-11	PIN, CONNECTOR 7P			
* CN903	1-568-951-11	PIN, CONNECTOR 2P			
*	A-6065-326-A	FL-104 BOARD, COMPLETE ***********************			(Ref.No. 2,000 Series)
	3-051-075-02	HOLDER, FL			
	3-884-241-01	SHEET (C), ADHESIVE			
		< CAPACITOR >			
C201	1-124-589-11	ELECT	47uF	20%	16V
C203	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C204	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C206	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C207	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C208	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C209	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C211	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C212	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C213	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C214	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V

Ref. No.	Part No.	Description			Remark
C216	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C219	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C220	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C221	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C222	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C223	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C224	1-128-131-11	ELECT	22uF	20%	50V
C225	1-128-131-11	ELECT	22uF	20%	50V
C226	1-137-150-11	FILM	0.01uF	5%	100V
C227	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C230	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C231	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C232	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C233	1-128-131-11	ELECT	22uF	20%	50V
C234	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C235	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C236	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C237	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C238	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C239	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C240	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C241	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C242	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C243	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C244	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C245	1-128-131-11	ELECT	22uF	20%	50V
C246	1-128-131-11	ELECT	22uF	20%	50V
C247	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
* CN201	1-568-945-11	PIN, CONNECTOR 7P			
CN202	1-793-490-11	CONNECTOR, FFC/FPC 17P			
CN203	1-785-730-11	CONNECTOR, FFC/FPC 9P			
CN204	1-770-031-11	CONNECTOR, BOARD TO BOARD 7P			
* CN205	1-568-941-11	PIN, CONNECTOR 3P			
		< DIODE >			
D202	8-719-988-61	DIODE	1SS355TE-17		
D205	8-719-073-03	DIODE	MA8082-(K8).S0		
D206	8-719-041-97	DIODE	MA113-(TX)		
D209	8-719-041-97	DIODE	MA113-(TX)		
D213	8-719-056-06	DIODE	SLR-342DCT32 (JOG)		
D214	8-719-056-06	DIODE	SLR-342DCT32 (MEGA CONTROL)		
D215	8-719-018-12	DIODE	MA8330-L-TX		
D216	8-719-422-67	DIODE	MA8062-H-TX		
		< FERRITE BEAD >			
FB201	1-414-135-11	FERRITE	0uH		
FB202	1-414-135-11	FERRITE	0uH		
FB203	1-414-135-11	FERRITE	0uH		
FB204	1-469-324-21	FERRITE	0uH		
		< IC >			
IC201	8-759-640-11	IC	M38B57MCH-G221FP		
IC202	8-759-326-78	IC	PST9140NL		
IC203	8-759-356-27	IC	NJM2129M-TE2		
IC205	8-759-593-18	IC	M35501FP-T2		
		< COIL >			
L201	1-412-533-21	INDUCTOR	47uH		

Ref. No.	Part No.	Description			Remark
		< FLUORESCENT INDICATOR >			
ND201	1-517-835-11	INDICATOR TUBE, FLUORESCENT			
		< TRANSISTOR >			
Q201	8-729-808-01	TRANSISTOR 2SD1622-S			
Q202	8-729-808-01	TRANSISTOR 2SD1622-S			
Q203	8-729-421-22	TRANSISTOR UN2211			
Q204	8-729-421-22	TRANSISTOR UN2211			
Q205	8-729-421-22	TRANSISTOR UN2211			
Q206	8-729-421-22	TRANSISTOR UN2211			
Q207	8-729-804-41	TRANSISTOR 2SB1122-S			
Q211	8-729-808-01	TRANSISTOR 2SD1622-S			
		< RESISTOR >			
R201	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R202	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R203	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R204	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R205	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R206	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-077-91	RES, CHIP	15K	5%	1/10W
R209	1-216-091-00	METAL CHIP	56K	5%	1/10W
R210	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R211	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R212	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R213	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R214	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R215	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R216	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R218	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R219	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R221	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R222	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R223	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R226	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R227	1-216-073-00	METAL CHIP	10K	5%	1/10W
R228	1-216-049-91	RES, CHIP	1K	5%	1/10W
R229	1-216-049-91	RES, CHIP	1K	5%	1/10W
R230	1-216-295-91	SHORT	0		
R231	1-216-073-00	METAL CHIP	10K	5%	1/10W
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W
R233	1-216-073-00	METAL CHIP	10K	5%	1/10W
R234	1-216-073-00	METAL CHIP	10K	5%	1/10W
R235	1-216-089-91	RES, CHIP	47K	5%	1/10W
R236	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R237	1-216-025-91	RES, CHIP	100	5%	1/10W
R238	1-216-097-91	RES, CHIP	100K	5%	1/10W
R239	1-216-025-91	RES, CHIP	100	5%	1/10W
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W
R254	1-216-073-00	METAL CHIP	10K	5%	1/10W
R255	1-216-073-00	METAL CHIP	10K	5%	1/10W
R261	1-216-049-91	RES, CHIP	1K	5%	1/10W
R262	1-216-049-91	RES, CHIP	1K	5%	1/10W
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W
R265	1-216-073-00	METAL CHIP	10K	5%	1/10W
R266	1-216-073-00	METAL CHIP	10K	5%	1/10W
R267	1-216-073-00	METAL CHIP	10K	5%	1/10W
R270	1-216-073-00	METAL CHIP	10K	5%	1/10W
R279	1-216-049-91	RES, CHIP	1K	5%	1/10W
R280	1-216-037-00	METAL CHIP	330	5%	1/10W
R281	1-216-049-91	RES, CHIP	1K	5%	1/10W
R283	1-216-025-91	RES, CHIP	100	5%	1/10W
R284	1-216-025-91	RES, CHIP	100	5%	1/10W
R285	1-216-073-00	METAL CHIP	10K	5%	1/10W
R288	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R289	1-216-073-00	METAL CHIP	10K	5%	1/10W
R290	1-216-025-91	RES, CHIP	100	5%	1/10W
R291	1-216-025-91	RES, CHIP	100	5%	1/10W
R292	1-216-025-91	RES, CHIP	100	5%	1/10W
R293	1-216-025-91	RES, CHIP	100	5%	1/10W
R294	1-216-025-91	RES, CHIP	100	5%	1/10W
R295	1-216-025-91	RES, CHIP	100	5%	1/10W
R296	1-216-093-91	RES, CHIP	68K	5%	1/10W
R298	1-216-031-00	METAL CHIP	180	5%	1/10W
R299	1-216-049-91	RES, CHIP	1K	5%	1/10W
		< SWITCH >			
S201	1-771-349-21	SWITCH, KEYBOARD (■)			
S202	1-771-349-21	SWITCH, KEYBOARD (❚❚)			
S208	1-771-349-21	SWITCH, KEYBOARD (JOG)			
S209	1-771-349-21	SWITCH, KEYBOARD (MEGA CONTROL)			
S212	1-771-349-21	SWITCH, KEYBOARD (⏏ OPEN/CLOSE)			
S213	1-771-349-21	SWITCH, KEYBOARD (▷)			
S214	1-771-349-21	SWITCH, KEYBOARD (DISC SKIP)			
S215	1-771-349-21	SWITCH, KEYBOARD (EX-CHANGE)			
S216	1-771-349-21	SWITCH, KEYBOARD (PREV ⏮)			
S217	1-771-349-21	SWITCH, KEYBOARD (NEXT ⏭)			
S222	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 5)			
S223	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 4)			
		< TRANSFORMER >			
T201	1-433-841-11	TRANSFORMER, DC-DC CONVERTER			
		< VIBRATOR >			
X201	1-781-282-31	VIBRATOR, CERAMIC (4MHz)			

Ref. No.	Part No.	Description			Remark
*	A-6065-327-A	FR-154 BOARD, COMPLETE **********************			
					(Ref.No. 2,000 Series)
		< CAPACITOR >			
C001	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C002	1-124-589-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
* CN001	1-691-406-11	CONNECTOR, BOARD TO BOARD 7P			
		< DIODE >			
D001	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)			
		< IC >			
IC001	8-749-011-22	IC GP1U27X			
		< COIL >			
L001	1-414-936-21	INDUCTOR	22uH		

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q001	8-729-421-22	TRANSISTOR UN2211			
Q002	8-729-421-22	TRANSISTOR UN2211			
		< RESISTOR >			
R001	1-216-037-00	METAL CHIP	330	5%	1/10W
R002	1-216-033-00	METAL CHIP	220	5%	1/10W
R003	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R004	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R005	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
		< SWITCH >			
S001	1-771-349-21	SWITCH, KEYBOARD (I/⏻)			
S002	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 3)			
S003	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 2)			
S004	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 1)			
*	A-6065-329-A	HP-114 BOARD, COMPLETE **********************			
					(Ref.No. 2,000 Series)
		< CAPACITOR >			
C701	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C702	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
		< CONNECTOR >			
* CN701	1-568-941-11	PIN, CONNECTOR 3P			
		< DIODE >			
D701	8-719-071-15	DIODE HZM6.8ZWA1TL			
D702	8-719-071-15	DIODE HZM6.8ZWA1TL			
		< FERRITE BEAD >			
FB701	1-414-135-11	FERRITE	0uH		
FB702	1-414-135-11	FERRITE	0uH		
FB703	1-414-135-11	FERRITE	0uH		
		< JACK >			
J701	1-785-505-31	JACK, LARGE TYPE (PHONES)			
		< VARIABLE RESISTOR >			
RV701	1-225-738-11	RES, VAR, CARBON 500/500 (LEVEL)			
*	A-6065-337-A	LE-24 BOARD, COMPLETE *********************			
					(Ref.No. 2,000 Series)
		< CONNECTOR >			
CN850	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D850	8-719-069-45	DIODE SELU5E23C-TP15 (DOLBY DIGITAL)			
		< RESISTOR >			
R850	1-216-041-00	METAL CHIP	470	5%	1/10W

Ref. No.	Part No.	Description			Remark
*	A-6065-332-A	LM-59 BOARD, COMPLETE **********************			
*	A-6065-334-A	MB-85 BOARD, COMPLETE (EXCEPT E)			
*	A-6065-335-A	MB-85 BOARD, COMPLETE (E) **************************			
					(Ref.No. 1,000 Series)
		< CAPACITOR >			
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C002	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C003	1-126-246-11	ELECT CHIP	220uF	20%	4V
C004	1-126-204-11	ELECT CHIP	47uF	20%	16V
C005	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C007	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C008	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C010	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C011	1-125-822-11	TANTALUM	10uF	20%	10V
C012	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C013	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C015	1-126-246-11	ELECT CHIP	220uF	20%	4V
C016	1-125-822-11	TANTALUM	10uF	20%	10V
C017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C018	1-125-822-11	TANTALUM	10uF	20%	10V
C019	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C201	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C202	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C203	1-125-822-11	TANTALUM	10uF	20%	10V
C204	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C206	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C210	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C213	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C307	1-125-822-11	TANTALUM	10uF	20%	10V
C309	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C310	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C316	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C319	1-125-822-11	TANTALUM	10uF	20%	10V
C320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C321	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C325	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C331	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

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Ref. No.	Part No.	Description			Remark
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C341	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C401	1-125-822-11	TANTALUM	10uF	20%	10V
C402	1-126-209-11	ELECT CHIP	100uF	20%	4V
C403	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C404	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-125-822-11	TANTALUM	10uF	20%	10V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C433	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C434	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C439	1-125-822-11	TANTALUM	10uF	20%	10V
C440	1-125-822-11	TANTALUM	10uF	20%	10V
C441	1-126-209-11	ELECT CHIP	100uF	20%	4V
C443	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C502	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C512	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C517	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C601	1-125-822-11	TANTALUM	10uF	20%	10V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C605	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C606	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C607	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C608	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C701	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C702	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C703	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C704	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C705	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C706	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C709	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C710	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C711	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C712	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C713	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C714	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C715	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C801	1-126-204-11	ELECT CHIP	47uF	20%	16V
C802	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C803	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C805	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C806	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C807	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C808	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C809	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C810	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C812	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C813	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C814	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C815	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
C816	1-104-601-11	ELECT CHIP	10uF	20%	10V
C817	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C818	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C819	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C820	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C821	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C822	1-126-204-11	ELECT CHIP	47uF	20%	16V
C823	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C824	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C825	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C830	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C831	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C832	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C833	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C834	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C835	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C836	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C837	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C904	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C905	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C906	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C907	1-125-822-11	TANTALUM	10uF	20%	10V
C908	1-128-391-11	ELECT CHIP	330uF	20%	6.3V
C909	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C910	1-125-822-11	TANTALUM	10uF	20%	10V
C911	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C913	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C914	1-125-822-11	TANTALUM	10uF	20%	10V
C916	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C922	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C923	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C924	1-125-822-11	TANTALUM	10uF	20%	10V
C925	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C926	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C927	1-125-822-11	TANTALUM	10uF	20%	10V
C928	1-128-391-11	ELECT CHIP	330uF	20%	6.3V
C929	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description	Remark
C931	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C932	1-125-822-11	TANTALUM 10uF 20%	10V
C933	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C934	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C935	1-125-822-11	TANTALUM 10uF 20%	10V
C937	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C939	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C940	1-125-822-11	TANTALUM 10uF 20%	10V
		< CONNECTOR >	
CN001	1-785-728-21	PIN (PC BOARD), CONNECTOR 7P	
CN002	1-779-936-11	CONNECTOR, FFC/FPC 18P	
CN003	1-779-936-11	CONNECTOR, FFC/FPC 18P	
CN004	1-778-772-11	CONNECTOR, FFC/FPC 7P	
CN005	1-784-327-11	CONNECTOR, FFC/FPC 28P	
CN006	1-774-768-11	CONNECTOR, FFC/FPC 17P	
CN007	1-778-274-11	CONNECTOR, FFC/FPC 13P	
CN009	1-778-274-11	CONNECTOR, FFC/FPC 13P	
CN010	1-573-806-21	PIN, CONNECTOR (1.5mm) (SMD) 6P	
* CN012	1-573-768-21	PIN, CONNECTOR (1.5mm) (SMD) 5P	
		< DIODE >	
D701	8-719-988-61	DIODE 1SS355TE-17	
D801	8-719-941-09	DIODE DAP202U	
D802	8-719-988-61	DIODE 1SS355TE-17	
D803	8-719-941-09	DIODE DAP202U	
D804	8-719-941-86	DIODE DAN202U	
D805	8-719-941-86	DIODE DAN202U	
D806	8-719-988-61	DIODE 1SS355TE-17	
D807	8-719-988-61	DIODE 1SS355TE-17	
		< FERRITE BEAD >	
FB001	1-469-324-21	FERRITE 0uH	
FB002	1-469-324-21	FERRITE 0uH	
FB003	1-469-324-21	FERRITE 0uH	
FB004	1-469-324-21	FERRITE 0uH	
FB005	1-469-324-21	FERRITE 0uH	
FB006	1-469-324-21	FERRITE 0uH	
FB007	1-469-324-21	FERRITE 0uH	
FB008	1-469-324-21	FERRITE 0uH	
FB010	1-469-116-21	FERRITE 0uH	
FB011	1-469-116-21	FERRITE 0uH	
FB012	1-469-116-21	FERRITE 0uH	
FB014	1-469-116-21	FERRITE 0uH	
FB015	1-469-116-21	FERRITE 0uH	
FB016	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB017	1-469-116-21	FERRITE 0uH	
FB018	1-469-116-21	FERRITE 0uH	
FB019	1-469-116-21	FERRITE 0uH	
FB020	1-469-116-21	FERRITE 0uH	
FB021	1-469-116-21	FERRITE 0uH	
FB022	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB024	1-469-116-21	FERRITE 0uH	
FB026	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB028	1-469-116-21	FERRITE 0uH	
FB029	1-469-324-21	FERRITE 0uH	
FB030	1-469-116-21	FERRITE 0uH	
FB031	1-469-116-21	FERRITE 0uH	
FB032	1-469-116-21	FERRITE 0uH	
FB033	1-469-116-21	FERRITE 0uH	
FB035	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
FB037	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB040	1-469-116-21	FERRITE 0uH	
FB043	1-500-283-11	INDUCTOR CHIP 0uH	
FB047	1-469-116-21	FERRITE 0uH	
FB048	1-500-283-11	INDUCTOR CHIP 0uH	
FB049	1-469-116-21	FERRITE 0uH	
FB050	1-500-283-11	INDUCTOR CHIP 0uH	
FB051	1-469-116-21	FERRITE 0uH	
FB052	1-500-283-11	INDUCTOR CHIP 0uH	
FB053	1-500-283-11	INDUCTOR CHIP 0uH	
FB054	1-500-283-11	INDUCTOR CHIP 0uH	
FB055	1-500-283-11	INDUCTOR CHIP 0uH	
FB056	1-500-283-11	INDUCTOR CHIP 0uH	
FB058	1-500-283-11	INDUCTOR CHIP 0uH	
FB060	1-500-283-11	INDUCTOR CHIP 0uH	
FB061	1-469-116-21	FERRITE 0uH	
FB063	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB065	1-469-116-21	FERRITE 0uH	
FB067	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB069	1-469-116-21	FERRITE 0uH	
FB071	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB073	1-469-116-21	FERRITE 0uH	
FB075	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB077	1-469-116-21	FERRITE 0uH	
FB078	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB080	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB081	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB083	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB084	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB085	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB086	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB087	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB088	1-216-801-11	METAL CHIP 22 5% 1/16W	
FB105	1-469-324-21	FERRITE 0uH	
FB106	1-469-324-21	FERRITE 0uH	
		< FILTER >	
FL001	1-234-177-21	FILTER, CHIP EMI	
FL002	1-234-177-21	FILTER, CHIP EMI	
FL003	1-233-893-21	FILTER, CHIP EMI	
FL004	1-233-893-21	FILTER, CHIP EMI	
FL005	1-234-177-21	FILTER, CHIP EMI	
FL006	1-234-177-21	FILTER, CHIP EMI	
FL008	1-234-177-21	FILTER, CHIP EMI	
FL009	1-234-177-21	FILTER, CHIP EMI	
FL010	1-234-177-21	FILTER, CHIP EMI	
FL011	1-234-177-21	FILTER, CHIP EMI	
FL013	1-233-893-21	FILTER, CHIP EMI	
FL014	1-234-177-21	FILTER, CHIP EMI	
FL015	1-234-177-21	FILTER, CHIP EMI	
FL016	1-234-177-21	FILTER, CHIP EMI	
FL202	1-234-177-21	FILTER, CHIP EMI	
FL203	1-234-177-21	FILTER, CHIP EMI	
FL204	1-234-177-21	FILTER, CHIP EMI	
FL205	1-234-177-21	FILTER, CHIP EMI	
FL301	1-234-177-21	FILTER, CHIP EMI	
FL302	1-234-177-21	FILTER, CHIP EMI	
FL303	1-234-177-21	FILTER, CHIP EMI	
FL401	1-234-177-21	FILTER, CHIP EMI	
FL402	1-234-177-21	FILTER, CHIP EMI	

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Ref. No.	Part No.	Description	Remark
FL403	1-234-177-21	FILTER, CHIP EMI	
FL404	1-234-177-21	FILTER, CHIP EMI	
FL405	1-234-177-21	FILTER, CHIP EMI	
FL501	1-234-177-21	FILTER, CHIP EMI	
FL502	1-234-177-21	FILTER, CHIP EMI	
FL503	1-234-177-21	FILTER, CHIP EMI	
FL601	1-234-177-21	FILTER, CHIP EMI	
FL602	1-234-177-21	FILTER, CHIP EMI	
FL701	1-234-177-21	FILTER, CHIP EMI	
FL904	1-234-177-21	FILTER, CHIP EMI	

< IC >

Ref. No.	Part No.	Description	
IC001	8-759-594-91	IC	SM8701AM-E2
IC003	8-759-531-92	IC	TC7WH04FU (TE12R)
IC004	8-759-531-92	IC	TC7WH04FU (TE12R)
IC005	8-759-486-55	IC	NJM2370U33-TE2
IC201	8-759-469-25	IC	AK6440AF-E2
IC202	8-759-599-39	IC	MB91101PFV-G-BND-R
IC203	8-759-580-60	IC	SN74AHCT08PWR
IC204	8-759-573-65	IC	IDT71V016S20PHAU-TL
IC205	8-759-581-30	IC	MBM29LV160B-260B-10
IC207	8-759-427-92	IC	PST9126NL
IC302	8-759-486-55	IC	NJM2370U33-TE2
IC303	8-759-567-27	IC	CXD8784R
IC304	8-759-567-35	IC	KM416V1200CT-L6T
IC401	8-752-398-60	IC	CXD1930BQ
IC402	8-759-567-34	IC	KM416S1020CT-G10T
IC403	8-759-567-34	IC	KM416S1020CT-G10T
IC404	8-759-486-55	IC	NJM2370U33-TE2
IC501	8-752-400-43	IC	CXD1901AR
IC502	8-752-390-12	IC	CXD1857Q
IC601	8-759-591-83	IC	CXD9515Q
IC602	8-759-567-55	IC	KM29V16000AT-T
IC701	8-759-598-87	IC	CXD8791AQ
IC702	8-759-337-40	IC	NJM2904V (TE2)
IC801	8-759-522-13	IC	BA5981FP-E2
IC802	8-759-567-26	IC	BA5983FP-E2
IC803	8-759-338-78	IC	BA10324AFV-E2
IC902	8-759-572-26	IC	CXD8799N-T2
IC904	8-759-052-52	IC	L78M05T-FA
IC905	8-759-572-26	IC	CXD8799N-T2
IC906	8-759-572-26	IC	CXD8799N-T2
IC907	8-759-572-26	IC	CXD8799N-T2

< COIL >

Ref. No.	Part No.	Description	
L001	1-414-754-11	INDUCTOR	10uH
L402	1-414-754-11	INDUCTOR	10uH

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q801	8-729-015-74	TRANSISTOR	UN5111-TX
Q802	8-729-230-63	TRANSISTOR	2SC4116-YG
Q803	8-729-230-63	TRANSISTOR	2SC4116-YG

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R001	1-216-833-91	RES, CHIP	10K	5%	1/16W
R002	1-216-833-91	RES, CHIP	10K	5%	1/16W
R003	1-216-833-91	RES, CHIP	10K	5%	1/16W
R004	1-216-821-11	METAL CHIP	1K	5%	1/16W
R005	1-216-821-11	METAL CHIP	1K	5%	1/16W
R006	1-216-821-11	METAL CHIP	1K	5%	1/16W
R007	1-216-864-11	METAL CHIP	0	5%	1/16W
R009	1-216-864-11	METAL CHIP	0	5%	1/16W
R010	1-216-801-11	METAL CHIP	22	5%	1/16W
R014	1-216-801-11	METAL CHIP	22	5%	1/16W
R016	1-216-821-11	METAL CHIP	1K	5%	1/16W
R023	1-216-821-11	METAL CHIP	1K	5%	1/16W
R030	1-216-821-11	METAL CHIP	1K	5%	1/16W
R035	1-216-833-91	RES, CHIP	10K	5%	1/16W
R036	1-216-821-11	METAL CHIP	1K	5%	1/16W
R037	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R040	1-216-864-11	METAL CHIP	0	5%	1/16W
R044	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R045	1-216-833-91	RES, CHIP	10K	5%	1/16W
R053	1-216-833-91	RES, CHIP	10K	5%	1/16W
R202	1-216-801-11	METAL CHIP	22	5%	1/16W
R203	1-216-833-91	RES, CHIP	10K	5%	1/16W
R204	1-216-833-91	RES, CHIP	10K	5%	1/16W
R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R206	1-216-845-11	METAL CHIP	100K	5%	1/16W
R207	1-216-833-91	RES, CHIP	10K	5%	1/16W
R212	1-216-813-11	METAL CHIP	220	5%	1/16W
R213	1-216-801-11	METAL CHIP	22	5%	1/16W
R217	1-216-833-91	RES, CHIP	10K	5%	1/16W
R222	1-216-833-91	RES, CHIP	10K	5%	1/16W
R223	1-216-833-91	RES, CHIP	10K	5%	1/16W
R225	1-216-833-91	RES, CHIP	10K	5%	1/16W
R226	1-216-833-91	RES, CHIP	10K	5%	1/16W
R227	1-216-813-11	METAL CHIP	220	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-813-11	METAL CHIP	220	5%	1/16W
R230	1-216-813-11	METAL CHIP	220	5%	1/16W
R231	1-216-813-11	METAL CHIP	220	5%	1/16W
R232	1-216-813-11	METAL CHIP	220	5%	1/16W
R235	1-216-864-11	METAL CHIP	0	5%	1/16W
R237	1-216-246-00	RES, CHIP	100K	5%	1/8W (E)
R238	1-216-216-00	RES, CHIP	5.6K	5%	1/8W
R239	1-216-230-00	RES, CHIP	22K	5%	1/8W (E)
R240	1-216-246-00	RES, CHIP	100K	5%	1/8W (E)
R241	1-216-216-00	RES, CHIP	5.6K	5%	1/8W
R305	1-218-879-11	RES, CHIP	22K	0.50%	1/16W
R306	1-218-831-11	RES, CHIP	220	0.50%	1/16W
R307	1-218-883-11	RES, CHIP	33K	0.50%	1/16W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R309	1-216-838-11	METAL CHIP	27K	5%	1/16W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W
R313	1-216-833-91	RES, CHIP	10K	5%	1/16W
R314	1-216-833-91	RES, CHIP	10K	5%	1/16W
R315	1-216-833-91	RES, CHIP	10K	5%	1/16W
R316	1-218-855-11	RES, CHIP	2.2K	0.50%	1/16W
R317	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R318	1-216-849-11	METAL CHIP	220K	5%	1/16W
R319	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R320	1-218-853-11	RES, CHIP	1.8K	0.50%	1/16W
R321	1-218-847-11	RES, CHIP	1K	0.50%	1/16W
R322	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R323	1-216-833-91	RES, CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R324	1-216-833-91	RES, CHIP	10K	5%	1/16W
R325	1-216-833-91	RES, CHIP	10K	5%	1/16W
R326	1-216-833-91	RES, CHIP	10K	5%	1/16W
R327	1-216-833-91	RES, CHIP	10K	5%	1/16W
R328	1-216-833-91	RES, CHIP	10K	5%	1/16W
R329	1-216-833-91	RES, CHIP	10K	5%	1/16W
R330	1-216-833-91	RES, CHIP	10K	5%	1/16W
R331	1-216-833-91	RES, CHIP	10K	5%	1/16W
R332	1-216-833-91	RES, CHIP	10K	5%	1/16W
R337	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-216-833-91	RES, CHIP	10K	5%	1/16W
R339	1-216-833-91	RES, CHIP	10K	5%	1/16W
R340	1-216-833-91	RES, CHIP	10K	5%	1/16W
R341	1-216-809-11	METAL CHIP	100	5%	1/16W
R403	1-216-833-91	RES, CHIP	10K	5%	1/16W
R404	1-216-864-11	METAL CHIP	0	5%	1/16W
R405	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R406	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R407	1-216-833-91	RES, CHIP	10K	5%	1/16W
R409	1-216-864-11	METAL CHIP	0	5%	1/16W
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W
R411	1-216-833-91	RES, CHIP	10K	5%	1/16W
R412	1-216-809-11	METAL CHIP	100	5%	1/16W
R426	1-216-813-11	METAL CHIP	220	5%	1/16W
R427	1-216-813-11	METAL CHIP	220	5%	1/16W
R428	1-216-813-11	METAL CHIP	220	5%	1/16W
R429	1-216-813-11	METAL CHIP	220	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-813-11	METAL CHIP	220	5%	1/16W
R501	1-216-809-11	METAL CHIP	100	5%	1/16W
R519	1-216-809-11	METAL CHIP	100	5%	1/16W
R520	1-216-833-91	RES, CHIP	10K	5%	1/16W
R521	1-216-833-91	RES, CHIP	10K	5%	1/16W
R522	1-216-833-91	RES, CHIP	10K	5%	1/16W
R527	1-216-833-91	RES, CHIP	10K	5%	1/16W
R528	1-216-833-91	RES, CHIP	10K	5%	1/16W
R530	1-216-864-11	METAL CHIP	0	5%	1/16W
R537	1-216-806-11	RES, CHIP	56	5%	1/16W
R539	1-216-864-11	METAL CHIP	0	5%	1/16W
R540	1-216-864-11	METAL CHIP	0	5%	1/16W
R541	1-216-864-11	METAL CHIP	0	5%	1/16W
R543	1-216-864-11	METAL CHIP	0	5%	1/16W
R544	1-216-864-11	METAL CHIP	0	5%	1/16W
R604	1-216-833-91	RES, CHIP	10K	5%	1/16W
R605	1-216-833-91	RES, CHIP	10K	5%	1/16W
R606	1-216-833-91	RES, CHIP	10K	5%	1/16W
R630	1-216-833-91	RES, CHIP	10K	5%	1/16W
R631	1-216-833-91	RES, CHIP	10K	5%	1/16W
R632	1-216-833-91	RES, CHIP	10K	5%	1/16W
R633	1-216-833-91	RES, CHIP	10K	5%	1/16W
R634	1-216-833-91	RES, CHIP	10K	5%	1/16W
R635	1-216-833-91	RES, CHIP	10K	5%	1/16W
R636	1-216-815-11	METAL CHIP	330	5%	1/16W
R637	1-216-809-11	METAL CHIP	100	5%	1/16W
R638	1-216-809-11	METAL CHIP	100	5%	1/16W
R639	1-216-809-11	METAL CHIP	100	5%	1/16W
R640	1-216-809-11	METAL CHIP	100	5%	1/16W
R641	1-216-809-11	METAL CHIP	100	5%	1/16W
R642	1-216-809-11	METAL CHIP	100	5%	1/16W
R643	1-216-815-11	METAL CHIP	330	5%	1/16W

Ref. No.	Part No.	Description			Remark
R647	1-216-833-91	RES, CHIP	10K	5%	1/16W
R701	1-216-805-11	METAL CHIP	47	5%	1/16W
R702	1-216-817-11	METAL CHIP	470	5%	1/16W
R703	1-216-817-11	METAL CHIP	470	5%	1/16W
R704	1-216-817-11	METAL CHIP	470	5%	1/16W
R705	1-216-817-11	METAL CHIP	470	5%	1/16W
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W
R707	1-216-844-11	METAL CHIP	82K	5%	1/16W
R708	1-216-844-11	METAL CHIP	82K	5%	1/16W
R709	1-216-844-11	METAL CHIP	82K	5%	1/16W
R710	1-216-844-11	METAL CHIP	82K	5%	1/16W
R711	1-216-833-91	RES, CHIP	10K	5%	1/16W
R712	1-216-839-11	METAL CHIP	33K	5%	1/16W
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W
R721	1-216-821-11	METAL CHIP	1K	5%	1/16W
R722	1-216-801-11	METAL CHIP	22	5%	1/16W
R748	1-216-833-91	RES, CHIP	10K	5%	1/16W
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W
R752	1-216-821-11	METAL CHIP	1K	5%	1/16W
R755	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R757	1-216-864-11	METAL CHIP	0	5%	1/16W
R758	1-216-864-11	METAL CHIP	0	5%	1/16W
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W
R802	1-216-841-11	METAL CHIP	47K	5%	1/16W
R803	1-216-841-11	METAL CHIP	47K	5%	1/16W
R804	1-216-841-11	METAL CHIP	47K	5%	1/16W
R805	1-216-840-11	METAL CHIP	39K	5%	1/16W
R806	1-216-840-11	METAL CHIP	39K	5%	1/16W
R807	1-216-835-11	METAL CHIP	15K	5%	1/16W
R808	1-216-835-11	METAL CHIP	15K	5%	1/16W
R809	1-216-844-11	METAL CHIP	82K	5%	1/16W
R810	1-216-844-11	METAL CHIP	82K	5%	1/16W
R812	1-216-845-11	METAL CHIP	100K	5%	1/16W
R813	1-216-845-11	METAL CHIP	100K	5%	1/16W
R815	1-216-836-11	METAL CHIP	18K	5%	1/16W
R816	1-216-845-11	METAL CHIP	100K	5%	1/16W
R817	1-216-852-11	METAL CHIP	390K	5%	1/16W
R818	1-216-852-11	METAL CHIP	390K	5%	1/16W
R819	1-216-849-11	METAL CHIP	220K	5%	1/16W
R820	1-216-851-11	METAL CHIP	330K	5%	1/16W
R821	1-216-840-11	METAL CHIP	39K	5%	1/16W
R822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R823	1-216-833-91	RES, CHIP	10K	5%	1/16W
R824	1-216-833-91	RES, CHIP	10K	5%	1/16W
R825	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R826	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R827	1-216-851-11	METAL CHIP	330K	5%	1/16W
R828	1-216-837-11	METAL CHIP	22K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R831	1-216-833-91	RES, CHIP	10K	5%	1/16W
R832	1-216-833-91	RES, CHIP	10K	5%	1/16W
R834	1-216-847-11	METAL CHIP	150K	5%	1/16W
R835	1-216-847-11	METAL CHIP	150K	5%	1/16W
R836	1-216-847-11	METAL CHIP	150K	5%	1/16W
R837	1-216-844-11	METAL CHIP	82K	5%	1/16W
R838	1-216-848-11	METAL CHIP	180K	5%	1/16W
R839	1-216-848-11	METAL CHIP	180K	5%	1/16W
R840	1-216-848-11	METAL CHIP	180K	5%	1/16W
R841	1-216-843-11	METAL CHIP	68K	5%	1/16W
R842	1-216-844-11	METAL CHIP	82K	5%	1/16W

MB-85 POWER BLOCK

Ref. No.	Part No.	Description			Remark
R843	1-216-844-11	METAL CHIP	82K	5%	1/16W
R844	1-216-843-11	METAL CHIP	68K	5%	1/16W
R845	1-216-843-11	METAL CHIP	68K	5%	1/16W
R846	1-216-841-11	METAL CHIP	47K	5%	1/16W
R847	1-216-296-91	SHORT	0		
R851	1-216-833-91	RES, CHIP	10K	5%	1/16W
R852	1-216-833-91	RES, CHIP	10K	5%	1/16W
R853	1-216-833-91	RES, CHIP	10K	5%	1/16W
R854	1-216-833-91	RES, CHIP	10K	5%	1/16W
R855	1-216-834-11	METAL CHIP	12K	5%	1/16W
R856	1-216-836-11	METAL CHIP	18K	5%	1/16W
R857	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R858	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R859	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R860	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R861	1-216-296-91	SHORT	0		
R864	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R867	1-216-833-91	RES, CHIP	10K	5%	1/16W
R868	1-216-833-91	RES, CHIP	10K	5%	1/16W
R869	1-216-833-91	RES, CHIP	10K	5%	1/16W
R870	1-216-815-11	METAL CHIP	330	5%	1/16W
R871	1-216-817-11	METAL CHIP	470	5%	1/16W
R872	1-216-815-11	METAL CHIP	330	5%	1/16W
R873	1-216-821-11	METAL CHIP	1K	5%	1/16W
R909	1-216-809-11	METAL CHIP	100	5%	1/16W
R912	1-216-809-11	METAL CHIP	100	5%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R918	1-216-809-11	METAL CHIP	100	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
* RB201	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB202	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB203	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB204	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB601	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV401	1-223-583-11	RES, ADJ, CARBON 1K			
		< VIBRATOR >			
X001	1-781-188-21	OSCILLATOR, CRYSTAL (27MHz)			
X201	1-781-185-21	VIBRATOR, CERAMIC (12.5MHz)			

*	1-468-372-11	POWER BLOCK (HS-034SU) (US, Canadian)
*	1-468-372-21	POWER BLOCK (HS-034SF) (E, PX)

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(Ref.No. 6,000 Series)

Ref. No.	Part No.	Description		Remark
		< CAPACITOR >		
⚠C101	1-115-165-11	FILM	0.1uF	250V
⚠C102	1-115-165-11	FILM	0.1uF	250V
C110	1-113-607-11	ELECT	330uF	400V (HS-034SF)
C110	9-884-583-01	ELECT	270uF	200V (HS-034SU)
C114	1-107-967-11	ELECT	1uF	400V
C211	1-111-090-11	ELECT	560uF	35V
C212	1-111-090-11	ELECT	560uF	35V
C213	1-126-947-11	ELECT	47uF	35V
C301	1-126-960-11	ELECT	1uF	50V
C311	1-111-090-11	ELECT	560uF	35V
C313	1-126-942-11	ELECT	1000uF	25V
C315	1-126-964-11	ELECT	10uF	50V
C511	1-126-942-11	ELECT	1000uF	25V
C512	1-126-947-11	ELECT	47uF	35V
C611	1-111-087-11	ELECT	330uF	35V
C612	1-111-087-11	ELECT	330uF	35V
C613	1-126-947-11	ELECT	47uF	35V
		< DIODE >		
D101	9-884-089-01	DIODE S1WBA60		
D102	8-719-160-68	DIODE RD18FB2 (HS-034SF)		
D104	8-719-109-57	DIODE RD2.4ESB2		
D105	9-980-073-01	DIODE 1SS270A		
D106	9-880-435-01	DIODE D1N60		
D109	9-880-435-01	DIODE D1N60		
D211	9-884-584-01	DIODE SF6L20U		
D311	8-719-500-50	DIODE D3S4M		
D312	9-980-073-01	DIODE 1SS270A		
D511	8-719-027-43	DIODE S2L20U		
D611	8-719-500-50	DIODE D3S4M		
D612	8-719-160-68	DIODE RD18FB2		
D613	9-980-073-01	DIODE 1SS270A		
		< FUSE >		
⚠F101	1-532-388-31	FUSE (2A/250V) (HS-034SF)		
⚠F101	1-533-296-11	FUSE (2A/125V) (HS-034SU)		
		< IC >		
IC301	8-759-420-19	IC AN1431T		
		< IC LINK >		
⚠P211	1-533-588-11	IC LINK 500mA		
⚠P311	1-533-593-11	IC LINK 2A		
⚠P312	1-533-589-11	IC LINK 750mA		
⚠P511	1-533-589-11	IC LINK 750mA		
⚠P611	1-533-593-11	IC LINK 2A		
		< PHOTO COUPLER >		
⚠PC101	8-749-010-59	PHOTO COUPLER TLP721F		
		< TRANSISTOR >		
Q101	8-729-039-75	TRANSISTOR 2SK2185 (HS-034SU)		
Q101	9-880-450-01	TRANSISTOR 2SK2333 (HS-034SF)		
Q102	8-729-023-98	TRANSISTOR 2SC3377		
Q103	8-729-039-75	TRANSISTOR 2SK2185 (HS-034SU)		
Q103	9-880-450-01	TRANSISTOR 2SK2333 (HS-034SF)		
Q211	9-884-585-01	TRANSISTOR 2SJ490		
Q311	9-980-439-01	TRANSISTOR 2SJ488		
Q312	8-729-900-95	TRANSISTOR 2SC1740S		
Q511	9-880-440-01	TRANSISTOR 2SK2279		
Q512	8-729-901-52	TRANSISTOR 2SA933S		
Q611	8-729-921-42	TRANSISTOR 2SA1679		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	A-6065-331-A	SE-91 BOARD, COMPLETE *********************			
					(Ref.No. 2,000 Series)
		< CAPACITOR >			
C801	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN801	1-573-383-11	PIN, CONNECTOR (PC BOARD) 2P			
CN802	1-779-057-11	HOUSING, CONNECTOR 7P			
CN803	1-506-481-11	PIN, CONNECTOR 2P			
		< PHOTO INTERRUPTER >			
PH801	8-749-924-30	PHOTO REFLECTOR GP2S28			
PH802	8-749-924-18	PHOTO INTERRUPTER RPI-1391			
		< RESISTOR >			
R801	1-216-027-00	METAL CHIP	120	5%	1/10W
R802	1-216-047-91	RES, CHIP	820	5%	1/10W

Ref. No.	Part No.	Description			Remark
*	A-6065-328-A	SW-321 BOARD, COMPLETE ************************			
					(Ref.No. 2,000 Series)
		< CONNECTOR >			
CN101	1-793-443-11	PIN, CONNECTOR 3P			
		< RESISTOR >			
R101	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R102	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R103	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R104	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R105	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R106	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R107	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R108	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R109	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
		< SWITCH >			
S101	1-771-349-21	SWITCH, KEYBOARD (INPUT)			
S102	1-771-349-21	SWITCH, KEYBOARD (TIME/TEXT)			
S103	1-771-349-21	SWITCH, KEYBOARD (TITLE)			
S104	1-771-349-21	SWITCH, KEYBOARD (DVD MENU)			
S105	1-771-349-21	SWITCH, KEYBOARD (RETURN)			
S106	1-771-349-21	SWITCH, KEYBOARD (1/ALL DISCS)			
S107	1-771-349-21	SWITCH, KEYBOARD (SHUFFLE)			
S108	1-771-349-21	SWITCH, KEYBOARD (PGM)			
S109	1-771-349-21	SWITCH, KEYBOARD (REPEAT)			
S110	1-771-349-21	SWITCH, KEYBOARD (CLEAR)			
S111	1-771-349-21	SWITCH, KEYBOARD (LOAD)			

Ref. No.	Part No.	Description			Remark
*	A-6065-333-A	TK-53 BOARD, COMPLETE *********************			
					(Ref.No. 3,000 Series)
		< CAPACITOR >			
C004	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C005	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C006	1-124-779-00	ELECT CHIP	10uF	20%	16V
C007	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C008	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C009	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C010	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C011	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C012	1-124-779-00	ELECT CHIP	10uF	20%	16V
C013	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C014	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C015	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C016	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C017	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V
C018	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C019	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V
C020	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C021	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C022	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C023	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C024	1-164-730-11	CERAMIC CHIP	0.0012uF	10%	50V
C025	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C026	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C027	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C029	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C030	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C031	1-124-779-00	ELECT CHIP	10uF	20%	16V
C032	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C033	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C034	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C035	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C036	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C037	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C038	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C039	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C040	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C041	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
		< CONNECTOR >			
CN001	1-785-700-21	CONNECTOR, FPC (ZIF) 23P			
CN002	1-566-529-11	CONNECTOR, FPC (ZIF) 13P			
CN003	1-779-936-11	CONNECTOR, FFC/FPC 18P			
CN004	1-779-936-11	CONNECTOR, FFC/FPC 18P			
		< DIODE >			
D003	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC001	8-759-567-24	IC SSI33P3722			

TK-53

Ref. No.	Part No.	Description	Remark
		< COIL >	
L001	1-412-031-11	INDUCTOR CHIP 47uH	
		< TRANSISTOR >	
Q001	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
Q002	8-729-015-76	TRANSISTOR UN5211-TX	
		< RESISTOR >	
R001	1-216-815-11	METAL CHIP 330 5%	1/16W
R002	1-216-809-11	METAL CHIP 100 5%	1/16W
R003	1-216-809-11	METAL CHIP 100 5%	1/16W
R004	1-216-837-11	METAL CHIP 22K 5%	1/16W
R005	1-216-013-00	METAL CHIP 33 5%	1/10W
R006	1-216-013-00	METAL CHIP 33 5%	1/10W
R007	1-216-841-11	METAL CHIP 47K 5%	1/16W
R008	1-216-797-11	METAL CHIP 10 5%	1/16W
R009	1-216-834-11	METAL CHIP 12K 5%	1/16W
R010	1-216-833-91	RES, CHIP 10K 5%	1/16W
R012	1-216-864-11	METAL CHIP 0 5%	1/16W
R014	1-216-864-11	METAL CHIP 0 5%	1/16W
R015	1-216-833-91	RES, CHIP 10K 5%	1/16W
R016	1-216-833-91	RES, CHIP 10K 5%	1/16W
R017	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R018	1-216-833-91	RES, CHIP 10K 5%	1/16W
R022	1-216-811-11	METAL CHIP 150 5%	1/16W
R023	1-216-820-11	METAL CHIP 820 5%	1/16W
R025	1-216-813-11	METAL CHIP 220 5%	1/16W
R026	1-216-864-11	METAL CHIP 0 5%	1/16W
R029	1-216-861-11	METAL CHIP 2.2M 5%	1/16W

MISCELLANEOUS
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Ref. No.	Part No.	Description	Remark
6	1-791-197-11	CABLE, FLEXIBLE FLAT (FMA-14)	
7	1-791-198-11	CABLE, FLEXIBLE FLAT (FMA-15)	
8	1-791-199-11	CABLE, FLEXIBLE FLAT (FMA-16)	
⚠12	1-782-001-61	CORD, POWER (E, PX)	
⚠12	1-790-155-11	CORD, POWER (US, Canadian)	
13	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
70	1-418-097-11	ENCODER, ROTARY (JOG/CURSOR BUTTON)	
73	1-791-201-11	CABLE, FLEXIBLE FLAT (FMF-37)	
118	1-791-202-11	CABLE, FLEXIBLE FLAT (FCS-4)	
163	1-466-996-21	ENCODER, ROTARY (LOADING)	
174	1-791-195-11	CABLE, FLEXIBLE FLAT (FTM-8)	
179	1-791-196-11	CABLE, FLEXIBLE FLAT (FTM-9)	
180	1-791-200-11	CABLE, FLEXIBLE FLAT (FMC-13)	
⚠181	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
183	1-543-950-11	CORE, FERRITE	
M951	A-6062-080-A	MOTOR ASSY, ROTARY (TURN TABLE)	
M991	A-4604-834-A	MOTOR ASSY, LOADING	

****
HARDWARE LIST
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Ref. No.	Part No.	Description	Remark
#1	7-685-648-79	SCREW (M3X12), TAPPING	
#2	7-685-902-21	SCREW +PTPWH 2.6X8 (TYPE2)	
#3	7-621-773-93	SCREW +B 2.6X3	

ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-418-321-41	COMMANDER, STANDARD (RMT-D112A)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (E, PX)	
	1-575-334-11	CORD, CONNECTION (STEREO AV CABLE 1.5m) (E)	
	1-575-335-21	CORD, CONNECTION (S-VIDEO CABLE 1.5m)	
	1-782-997-11	CORD, CONNECTION (STEREO AV S-LINK CABLE 1.5m) (EXCEPT E)	
*	3-694-922-01	SHEET, PROTECTION	
	3-055-539-01	LID, BATTERY CASE (for RMT-D112A)	
	3-867-237-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-867-237-21	MANUAL, INSTRUCTION (FRRENCH) (Canadian)	
	3-867-237-31	MANUAL, INSTRUCTION (ENGLISH, SPANISH, PORTUGUESE) (E)	

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